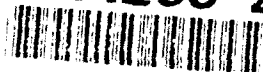


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TIMOTHY C. KLINGER

RICHARD P. KANDARE

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REPORT DOCUMENTATION PAGE			Form Approved GSA No. 5010-108	
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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE OCTOBER 1984	3. REPORT TYPE AND DATES COVERED Final		
4. TITLE AND SUBTITLE Ditch 1 Scott and Stoddard Counties, MO		5. FUNDING NUMBERS C DACW66-84-M-1417		
6. AUTHOR(S) Timothy C. Klinger Richard P. Kandare				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Historic Preservation Associates Fayetteville, AR		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING MONITORING AGENCY NAME(S) AND ADDRESS(ES) Dept. of the Army Memphis District Corps of Engineers B-202 Clifford Davis Federal Bldg. Memphis, TN 38103		10. SPONSORING MONITORING AGENCY REPORT NUMBER 72 6		
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION AVAILABILITY STATEMENT Unlimited		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words) The investigations described in this report focus on a background and literature search for existing data relating to cultural resources which are, or may be, found within the corridor along Ditch 1 in Scott and Stoddard Counties, MO. While USGS data do document the presence of some historic features, no prehistoric, historic, or architectural sites are currently on record as clearly being within the project area.				
14. SUBJECT TERMS		15. NUMBER OF PAGES 28		16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

DITCH 1

TIMOTHY C. KLINGER
RICHARD P. KANDARE

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HISTORIC PRESERVATION ASSOCIATES REPORTS 84-6

OCTOBER 1984

DITCH 1

A Cultural Resources Literature Search of Ditch 1,
Scott and Stoddard Counties, Missouri

by

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and
Richard P. Kandare

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October 1984

Historic Preservation Associates Reports 84-6

Report submitted to the Memphis District Corps of Engineers
in accordance with Purchase Order DACW66-84-M-1417

ABSTRACT

The investigations described in this report focus on a background and literature search for existing data relating to cultural resources which are, or may be, found within the corridor along Ditch 1 in Scott and Stoddard counties, Missouri. While USGS data do document the presence of some historic features, no prehistoric, historic or historic architectural sites are currently on record as clearly being within the project area.

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BACKGROUND AND PURPOSE OF THE REPORT

In June 1984, the Memphis District of the U.S. Army Corps of Engineers (COE) asked Historic Preservation Associates (HPA) to submit a quotation for a literature and records search of the Ditch 1 area of Scott and Stoddard counties, Missouri. On 2 July 1984, the HPA quote was forwarded to the Memphis District. Purchase Order No. DACW66-84-M-1417 was issued 10 July 1984 and was received by HPA on 18 July 1984.

The purpose of this report is to document the results of our search of the relevant literature and records relating to the project area as required by the Scope of Work (Appendix A). The structure and content of the report adhere to the guidelines contained in The Management of Archeological Resources: The Airlie House Report (McGimsey and Davis 1977) and to those issued by the Missouri Office of Historic Preservation (1978).

Project Location and Dates of Investigation

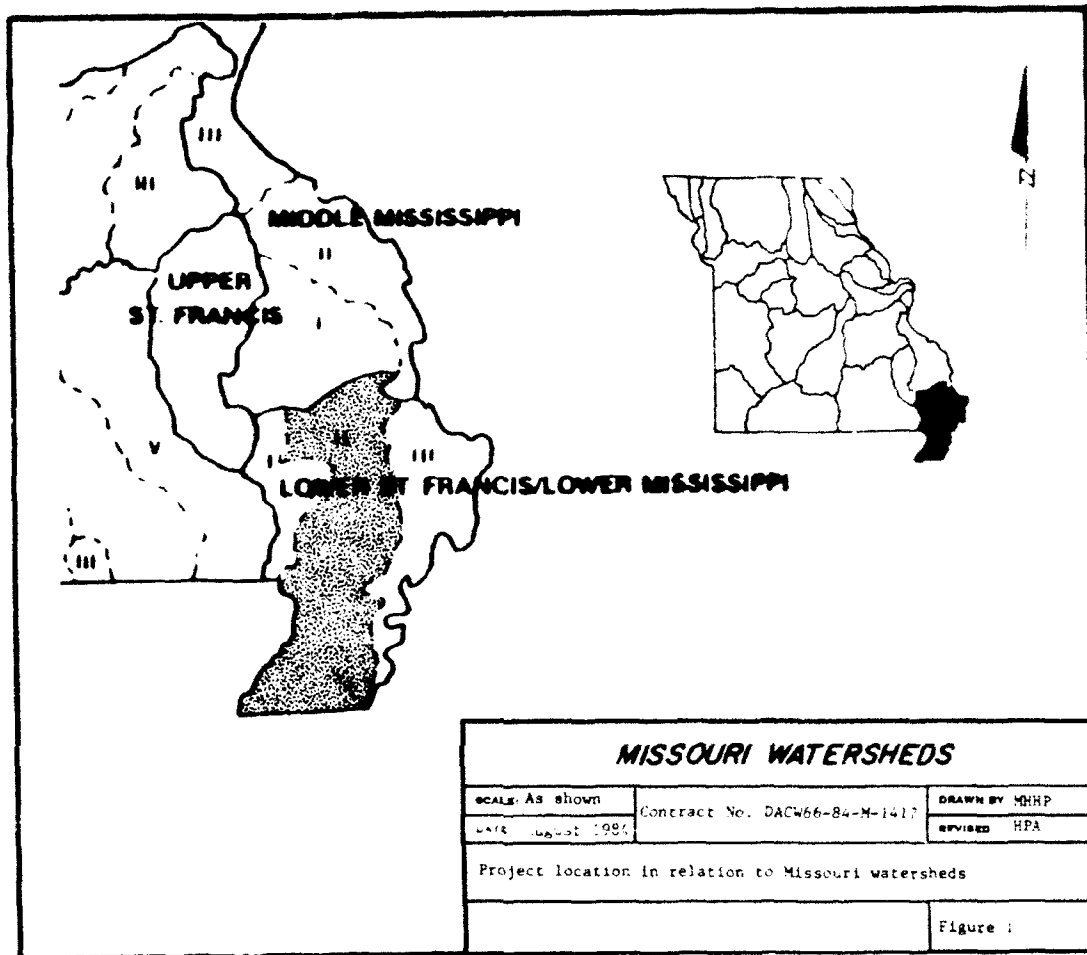
The project area is located in the Little River watershed of the St. Francis Basin in Scott and Stoddard counties, Missouri and covers parts of T29N/R13E, T29N/R12E, T28N/R12E, T27N/R12E and T26N/R12E (Figure 1). Ditch 1 includes a 700 ft (213.36 m) wide artificial ditch corridor approximately 21.5 mi (34.7 km) long (ca 1824 ac, 738 ha). The project is entirely within Missouri's Eastern Lowlands. HPA investigations were begun on 23 July 1984 and were completed with a report submitted in August 1984.

Project Sponsor and Participants

The overall project sponsor is the Memphis District of the U.S. Army Corps of Engineers. The Contracting Officer for the program is Ms. Mildred H. Phillips and the archeological liaison is Mr. Jimmy D. McNeil of the District's Environmental Analysis Branch. Historic Preservation Associates has carried out the work reported on here. Mr. Timothy C. Klinger served as the Principal Investigator and wrote the report along with Mr. Richard P. Kandare (Appendix B).

METHODS OF INVESTIGATION

A background and literature search is defined in the Scope of Work (Section C-3.2) as a "...comprehensive examination of existing literature and records for the purpose of inferring the potential presence and character of cultural resources in the study area." This definition summarizes the direction of the present project. In an attempt to accomplish this goal, we have reviewed all relevant published and unpublished cultural resources manuscripts. We have also contacted the State Historic Preservation Officer and obtained a summary of his relevant records. In addition to these sources relevant maps of the General Land Office (GLO) have been reviewed as have those published by the U.S. Geological Survey (USGS). A review of the records curated by the Archaeological Survey of Missouri was also obtained. Much of the following report represents an updated version of the Klinger et al's



(1981) Cultural Resources Survey and Testing in the Bootheel Region of Missouri. Relevant sections of that report were contributed by Cynthia R. Price.

ENVIRONMENTAL SETTING

The Ditch 1 project area is situated in the Lower St. Francis/Lower Mississippi Management Unit which is located in the extreme southeastern corner of Missouri (Weichman 1983:82). Ditch 1 begins approximately .8 mi (1.3 km) north of the community of Chaffee, Missouri in an area where the Advance Lowland merges with the Morehouse Lowland. From this point Ditch 1 flows generally to the southwest for about 5.3 mi (8.6 km) before turning to the south for the rest of the 16.2 mi (26.1 km) project corridor.

In order to explain patterns in both prehistoric and historic settlement systems in the project area it is important to be aware of the natural environment which challenged the human populations in the Mississippi Valley for thousands of years. The Valley's Eastern Lowlands are a result of deposition by the meandering Mississippi River which often abandoned natural levees to seek a gradient advantage, thus forming a series of oxbow lakes and backwater swamps. This produced

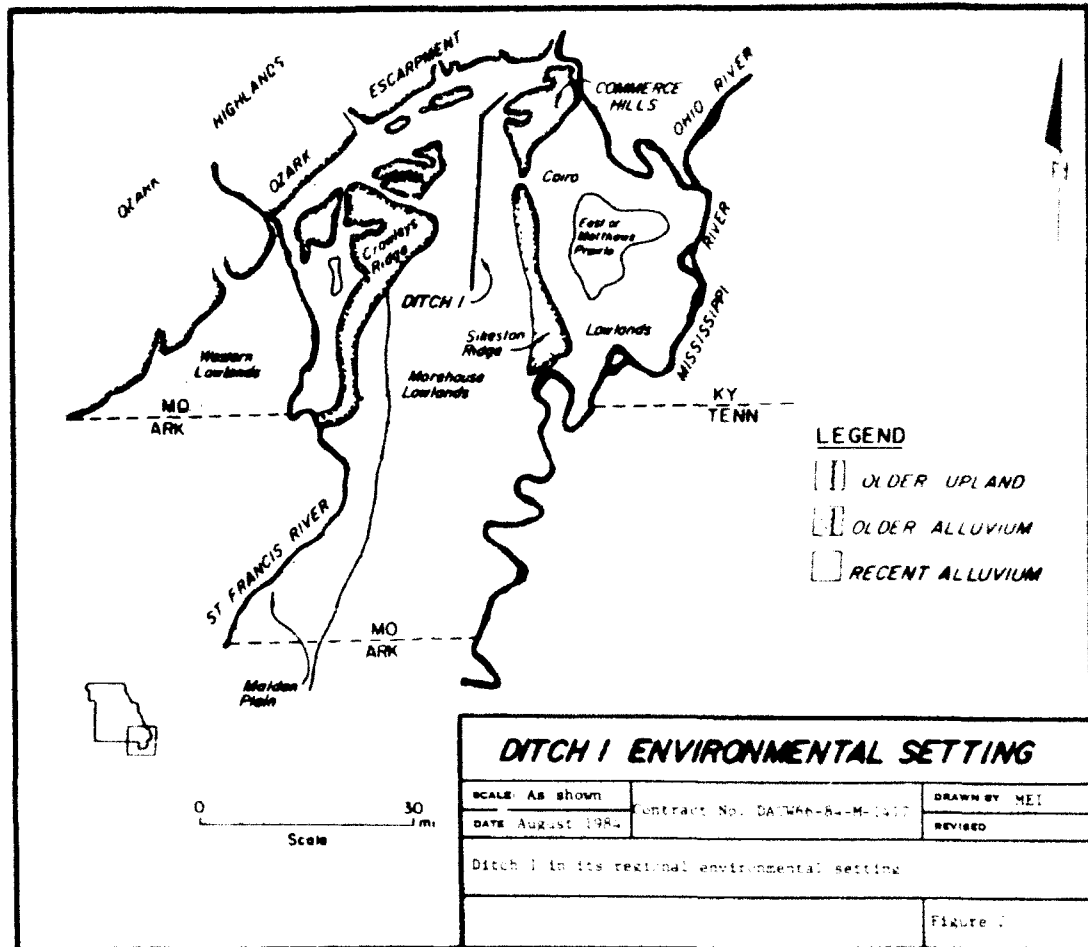
closely packed aquatic and terrestrial habitats throughout the meander belt zone. The natural levees are of low relief, seldom exceeding 6 vertical m (ca 19.7 ft) above the surrounding floodplain. The aquatic habitat, prior to drainage, consisted of oxbow lakes and shallow backwater swamps, often called "cypries" in southeast Missouri. The interface between terrestrial and aquatic habitats was probably composed of a myriad of minor ecotones (Lewis 1974:29) which in turn have been an important factor in determining the location of human settlements during the prehistoric and early historic periods.

To the casual observer southeast Missouri and northeast Arkansas appear as a vast tract of arable land of extremely low relief bisected by Crowley's Ridge. What appears to be a simple landscape is actually complex. A great variety of landforms and soil types, in combination with riverine biota, contribute to a diverse natural environment. A variety of populations used southeast Missouri from approximately 12,000 years ago to the protohistoric era, which began here ca A.D. 1600. Historic populations made use of the area from the time of arrival of the first explorers, followed by trappers, pioneer subsistence agriculturalists, commercial agriculturalists, and timber harvesters to modern wholesale agriculturalists who presently use the bulk of the land. Landforms, natural resources and biota were used differently through time as the region witnessed hunting-gathering bands evolve into small sedentary communities and ultimately into huge, complex, near-urban societies in the prehistoric past. Southeast Missouri and northeast Arkansas were not marginal to major developments elsewhere in eastern North America, but rather seem to have been in the mainstream. All cultural stages are well represented by abundant archeological evidence.

It is likely that for human populations which have occupied the Lower Mississippi Alluvial Valley the most critical variables in determining site location were landforms, biotic communities and soil associations. It is also probable that no single one of these was the prime ingredient in determining site location; all three in combination established natural parameters within which a settlement strategy had to operate. All of these variables are tightly interrelated in a deterministic fashion. Landforms represent depositional history which determines soil associations which in turn together determine the biota.

The Morehouse Lowland is a part of the Eastern Lowlands or alluvial plains lying between Crowley's Ridge and the present Mississippi River channel (Figure 2). The Morehouse Lowland is a part of the St. Francis Basin and is bordered on the east by Sikeston Ridge, a remnant of the old Ohio River alluvial fan (Krusekopf 1966:7). It is bordered on the west by Crowley's Ridge, an erosional remnant comprised of Older Uplands, which runs northeast-southwest across the Mississippi Valley. To the south, the Morehouse Lowland is bordered by the Malden Plain (or Kennett Ridge) which is also a remnant Ohio River fan lying at the base of Crowley's Ridge (Krusekopf 1966:7). These lowlands merge with the Little River Lowland to the south and with the Advance Lowland to the north.

Geological deposits in the lowland are recent Quaternary alluvium consisting of clay, silt, sand and gravel (McCracken 1961). There are no lithic resources available in the valley itself, however a variety of



materials including cherts, quartzite, hematite, sandstone, dolomite and limestone are readily available on Crowley's Ridge and in the Ozark Highland bordering the Mississippi Valley to the west.

The surface of the Morehouse Lowland is marked by numerous swales and former channels of the Mississippi River, separated by slightly higher ridges. Relief is low with elevations changing less than 1 m (3.28 ft) in most areas. The elevation in the northern part of the lowland averages approximately 96.1 m (315 ft) and in the southern part about 71.6 m (235 ft). The slope is approximately 1 m per 5.28 km (1 ft per 1 mi) (Krusekopf 1966:8).

Ditch 1 crosses Little River near the line between sections 2 and 11 in T27N/R12E. In this vicinity the Morehouse and Little River lowlands merge and are environmentally similar in many respects. The Little River Lowland is bordered on the east by the Mississippi River and on the west by the Malden Plain. This lowland, which forms the major part of the central St. Francis Basin, is approximately 128.7 km (80 mi) long and 32.2 km (20 mi) wide (Fisk 1944:25). According to Fisk (1944:25-26), the Little River Lowland differs topographically from the Morehouse Lowland in that the scars of the old braided Mississippi channels have been altered and obliterated to a greater extent by erosion and siltation. The Little River Lowland is in the active

floodplain of the Mississippi and, prior to modern drainage, was frequently inundated by overflows. The Morehouse Lowland was generally a swampland until the twentieth century when projects were initiated to help drain the region.

Professional archeologists as well as amateur collectors have long known that the major sites in much of the Mississippi Valley occur on higher landforms. Most surveys in the area, for example those conducted by Marshall (1965) and Hopgood (1969), reflect this phenomenon. Unfortunately, this fact often becomes a self-fulfilling prophecy and investigators look for sites on elevated landforms where they are known to occur while ignoring lower landforms where site density is thought to be extremely low or non-existent. This bias which has been evident in past survey work in southeast Missouri results in an inadequate data base from which to form predictive models. Until the entire surface of a survey tract containing both high and low land is reviewed, the frequency of sites as well as their size and location relative to various landforms will not be known.

Soils have been mapped and described by the U.S.D.A. Soil Conservation Service for all of the project area (soil data for Stoddard County is available in the form of field notes but is as yet unpublished). Ten soil associations have been identified in Scott County (Festervand 1981). These associations were not equally occupied by human populations in the past, and the known and anticipated correlation of archeological sites with certain soil types provides the major data set for predicting the distribution and size of such sites.

Soil as a variable in the determination of settlement patterns has been recognized and described by various archeologists working in southeast Missouri and northeast Arkansas (Lewis 1974; Cottier and Waselkov 1974; J. Price 1974; Morse and Morse 1977; Tandarich and Reagan 1978; Klinger 1976; Klinger et al 1981). Except for Tandarich and Reagan's investigation and those conducted by Klinger, almost all previous work has concentrated on the correlation of Mississippi Period sites with particular soil types. Research focusing on the correlation of prehistoric sites with certain soil types in the general area has been conducted by Cottier (1974:87) in Mississippi and New Madrid counties and by Morse and Morse (1977) on the Big Lake Transect Survey where they studied the distribution of Barnes (Late Woodland) sites in relation to soil types. The most detailed analysis of the relationship between soil attributes and archeological sites in southeast Missouri was conducted by Tandarich and Reagan (1978) in a portion of Mississippi County.

Most of the soils in the project area are Sharkey silty clays and clay loams (Table 1) formed in the clayey alluvium of slack water areas. These lowland soils are relatively fertile, but are adversely affected by wet and dry weather conditions (Krusekopf 1966:15). The soils are difficult to cultivate and prior to drainage and levee construction most of the clay soil areas would have been at least seasonally inundated (Festervand 1981:47).

The occurrence of some areas of Farrenburg fine sandy loam and Canalou loamy sand indicate the presence of natural levees or portions of high terraces within portions of the project corridor. Natural levees when compared with other landforms which occur on the lowlands have a higher probability of containing prehistoric archeological sites.

TABLE 1
 Characteristics of Soils Associated with the Project Corridor

TOWNSHIP AND RANGE	SEC.	SOIL TYPE	TOPOGRAPHIC SETTING	% SLOPE	DRAINAGE	FLOODING
T29N/ R13E	7	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
T29N/ R12E	12	31 Adler silt loam	loessal uplands & old flood plains	0-2	moderate- ly well drained	rare
		58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
T29N/ R12E	13	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
	14	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
	23	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
	22	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
	27	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
	34	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		31 Adler silt loam	loessal uplands & adjacent flood plains	0-2	moderate- ly well drained	rare
	33	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		53 Mhoon silt loam	Mississippi River alluvium	0-2	poor	rare
		31 Adler silt loam	loessal uplands & adjacent flood plains	0-2	moderate- well drained	rare
T28N/ R12E	4	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		53 Mhoon silt loam	Mississippi River alluvium	0-2	poor	rare
		42 Commerce silty clay loam	Mississippi River alluvium	0-2	somewhat poor	rare

TABLE 1 continued
 Characteristics of Soils Associated with the Project Corridor

TOWNSHIP AND RANGE	SEC.	SOIL TYPE	TOPOGRAPHIC SETTING	% SLOPE	DRAINAGE	FLOODING
T28N/ R12E	4	31 Alder silt loam	uplands & adjacent flood plains	0-2	moderate- ly well drained	rare
		59 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
	9	59 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
		42 Commerce silty clay loam	Mississippi River alluvium	0-2	somewhat poor	rare
		58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
	16	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		42 Commerce silty clay loam	Mississippi River alluvium	0-2	somewhat poor	rare
		59 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
	21	58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		61 Sikeston loam	Mississippi River alluvium	0-2	poor	frequent
		40 Clana loamy fine sand	natural levees & backswamps	0-2	moderate- ly well drained	none
		59 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
		34 Beulah fine sandy loam	high terraces & natural levees	0-2	somewhat excessive- ly	none
		47 Dundee silt loam	natural levees & terraces	0-2	somewhat poor	none
	33	61 Sikeston loam	Mississippi River alluvium	0-2	poor	frequent
		58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		34 Beulah fine sandy loam	high terraces & natural levees	0-2	somewhat excessive- ly	none

TABLE 1 continued
 Characteristics of Soils Associated with the Project Corridor

TOWNSHIP AND RANGE	SEC.	SOIL TYPE	TOPOGRAPHIC SETTING	% SLOPE	DRAINAGE	FLOODING
T28N/ R12E	33	59 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
T27N/ R12E	2	59 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
		58 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		47 Dundee silt loam	natural levees & terraces	0-2	somewhat poor	none
		66 Wardell loam	alluvium	0-2	poor	rare
		61 Sikeston loam	Mississippi River	0-2	poor	rare
	11	81 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		80 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
		67 Dundee loam	old natural levees & terraces	0-2	somewhat poor	none
		95 Farren- burg fine sandy loam	slightly convex natural levees or terraces	0-2	moderate- ly well drained	rare
		99 Tuckerman fine sandy loam	terraces	0-3	poor	---
	14	71 Gideon loam	slightly depressed flood plains	0-1	poor	---
		45 Canalou loamy sand	natural levees	0-2	well	---
		99 Tuckerman fine sandy loam	terraces	0-3	poor	---
		81 Sharkey silty clay	lower part of natural levees, backswamps	0-2	poor	rare
		80 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
		95 Farren- burg fine sandy loam	slightly convex natural levees or terraces	0-2	moderate- ly well drained	rare

TABLE 1 continued
 Characteristics of Soils Associated with the Project Corridor

TOWNSHIP AND RANGE	SEC.	SOIL TYPE	TOPOGRAPHIC SETTING	% SLOPE	DRAINAGE	FLOODING
T27N/ R12E	23	80 Sharkey silty clay loam	lower part of natural levees, backswamps	0-2	poor	rare
		45 Cana- loamy sand	natural levees	0-2	well drained	---
		91 Forest- dale silty clay loam	low areas of natural levees	0-1	poor	---
		81 Sharkey silty clay	lower parts of natural levees, backswamps	0-2	poor	rare
		55 Amagon silt loam	-----	---	---	---
	26	71 Gideon loam	slightly depressed flood plains	0-1	poor	---
		81 Sharkey silty clay	lower parts of natural levees, backswamps	0-2	poor	rare
		80 Sharkey silty clay	lower parts of natural levees, backswamps	0-2	poor	rare
		81 Sharkey silty clay	lower parts of natural levees, backswamps	0-2	poor	rare
		80 Sharkey silty clay loam	lower parts of natural levees, backswamps	0-2	poor	rare
		91 Forest- silty clay loam	low parts of natural levees	0-1	poor	---
		55 Amagon silt loam	---	---	---	---
		99 Tucker- man fine sandy loam	terraces	0-3	poor	---
		35 95 Farren- burg fine sandy loam	slightly convex natural levees or terraces	0-2	moderate- ly well drained	---
	2	71 Gideon loam	slightly depressed flood plains	0-1	poor	---
		81 Sharkey silty clay	lower parts of natural levees, backswamps	0-2	poor	rare
		80 Sharkey silty clay loam	lower parts of natural levees, backswamps	0-2	poor	rare
T26N/ R12E						

TABLE 1 concluded
 Characteristics of Soils Associated with the Project Corridor

TOWNSHIP AND RANGE	SEC.	SOIL TYPE	TOPOGRAPHIC SETTING	% SLOPE	DRAINAGE	FLOODING
T26N/ R12E	11	81 Sharkey silty clay	lower parts of natural levees, backswamps	0-2	poor	rare
		80 Sharkey silty clay loam	lower parts of natural levees, backswamps	0-2	poor	rare
		95 Farren- burg fine sandy loam	slightly convex natural levees or terraces	0-2	moderate- ly well drained	rare
		71 Gideon loam	---	---	---	---
	14	80 Sharkey silty clay loam	lower parts of natural levees, backswamps	0-2	poor	rare
		71 Gideon loam	---	---	---	---
	23	80 Sharkey silty clay loam	lower parts of natural levees, backswamps	0-2	poor	rare
		95 Farren- burg fine sandy loam	slightly convex natural levees or terraces	0-2	moderate-	rare
		71 Gideon loam	---	---	---	---

Soil data for T29N/R13E, T29N/R12E, T28N/R12E and T27N/R12E Section 2 from Festervand (1981). Soil data for T27N/R12E Sections 11, 14, 23, 26 and 35 and T26N/R12E from Butler (1984).

Usually the narrow natural levees associated with the braided stream topography characteristic of the region are frequently too small to map on a scale of 1:24000 (Butler 1984). Other soil types distributed along the project corridor include Beulah sandy loam, Dundee silt loam, Gideon silt loam and Tuckerman fine sandy loam.

Very little now remains of the native vegetation in the area. Cottier and Waselkov (1974:59-66) presented possible reconstructions of the early historic vegetation communities along the southern part of Sikeston Ridge and the southern part of the Morehouse Lowland. Lewis (1974) presented reconstructions for similar locales in the Cairo Lowland. Because soils, topography and drainage patterns of the Morehouse and Little River Lowlands are similar to the areas for which reconstructions have been attempted, it is likely such reconstructions would be applicable to the project area. Based on these reconstructions it appears that the lowlands probably included areas of seasonal swamp with a sweetgum-elm-cypress plant community accented by wetter areas of

deep cypress swamps. The higher land forms, such as the bordering ridges or stream levees, were most likely covered with sweet gum-elm and cane ridge forest. Of the lowland plant communities the latter was the most productive in terms of resources available for human exploitation (Lewis 1974:21-24).

GENERAL CULTURAL BACKGROUND

Tables 2 and 3 present a review of previous cultural resource investigations in the Morehouse and Little River lowlands. Relatively few professional investigations have been carried out in these areas. There have been no large scale systematic surveys and no excavations beyond limited testing. There have been no archeological investigations at historic sites in the vicinity of Ditch 1 with the exception of work at a protohistoric/very early historic aboriginal site (Campbell) in the southern portion of the Little River Lowland (Chapman and Anderson 1955; C. Price and J. Price 1980).

Although a number of archeological sites have been recorded in the vicinity of the Ditch 1 project area during 2 recent cultural resources surveys (Greer 1978; Iroquois Research Institute 1978b), investigations at the these sites were limited and included only surface collecting and very limited testing. Iroquois Research Institute (1978b) also conducted a cultural resources survey and recorded 2 prehistoric archeological sites (23S0431 and 23S0432). Historic Preservation Associates conducted a survey of the southern portion of Ditch 1 and 4 other nearby ditches and a portion of the Castor River. In addition, HPA tested 1 site along the Castor River and 3 along Ditch 19 (Klinger et al 1981). HPA also conducted a background records check and a literature search for the extended reach of Ditch 19 (Klinger 1983).

The extant archeological data base is poor. The cultural or chronological sequence has only been generally defined, and data are scant on the nature of sites, the range in functional variation among sites in the area and on settlement patterns and other aspects of cultural development. Prior historical investigations have included regional histories such as Goodspeed (1888). There is also available an unpublished history of Stoddard County (Forister n.d.). With the exception of the work by Iroquois Research Institute (1978a; 1978b), there have been no architectural studies conducted in this part of southeast Missouri.

Table 4 presents a summary of the prehistoric cultural sequence for the Morehouse Lowland and for the Little River Lowland. The information in the table is based on data from adjacent areas, from Sikeston Ridge and the Little River Lowland, as well as on those data which are available from the Morehouse Lowland.

Because investigators working in the region in the past tended to focus their efforts on the larger and later sites, there are few available data on pre-Woodland Period occupations. While there is evidence for Paleo-Indian and Archaic Period activities in this part of the Mississippi Valley (Chapman 1975:67, 157, 224), there are no data on such aspects as the nature of the settlements, site densities, subsistence strategies of the populations, preferred site locations or range in functional variation among the sites present.

TABLE 2
Selected Archeological Investigations in the Morehouse
and Little River Lowlands and Vicinity

INVESTIGATOR/REFERENCE	LOCATION AND DESCRIPTION OF WORK
Thomas (1894)	mound exploration and specimen collecting at selected mound centers in southeast Missouri for Bureau of American Ethnology, Smithsonian Institution
Holmes (1903)	study of aboriginal pottery including that from southeast Missouri
Fowke (1910)	mound exploration and specimen collecting in southeast Missouri; under auspices of the St. Louis Society of the Archaeological Institute of America. Sites recorded principally in northern part of Morehouse Lowland
Moore (1916)	visited selected locales along the Mississippi River as part of survey of Lower Mississippi valley; mound exploration and specimen collecting
Adams and Walker (1942)	survey of New Madrid County; recorded sites in both Little River Lowland and Morehouse Lowland
Phillips, Ford and Griffin (1951); Phillips (1970)	Lower Mississippi Valley Survey; investigated selected sites in southeast Missouri; proposed chronological sequence
Williams, S. (1954)	survey and investigation of selected southeast Missouri locales; proposed chronological sequence; recorded sites in both Little River Lowland and Morehouse Lowland
Chapman and Anderson (1955)	excavations at Campbell Site, a late proto-historic/historic period occupation in the southern part of Little River Lowland
Marshall (1965)	survey along proposed route of Interstate Highway 55 which crosses the Little River Lowland
Williams, J. (1968)	land leveling salvage work at selected sites in the southern part of the Little River Lowland
Hopgood (1969)	survey of Portage Open Bay in the Little River Lowland
Redfield (1971)	Dalton project survey by Ford and Redfield, recorded numerous sites in northern part of Morehouse Lowland
Kraker (1977); Gilmore (1979)	Survey in Mingo National Wildlife Refuge, northern Stoddard County
Chapman et al. (1977)	investigations at Lilbourn Site on the southwestern end of Sikeston Ridge
Greer (1978)	Cultural resources survey along pipeline route which crosses the project corridor in T27N/R12E Section 23; recorded a number of sites in the Morehouse Lowland including sites 23S0367 and 23S0370 located less than .8 km (.5 mi) east of the project corridor

TABLE 2 concluded
Selected Archeological Investigations in the Morehouse
and Little River Lowlands and Vicinity

INVESTIGATOR/REFERENCE	LOCATION AND DESCRIPTION OF WORK
Iroquois Research Institute (1978a); Iroquois Research Institute (1978b)	Cultural resources overview and predictive models for St. Francis Basin; Cultural resources survey along Castor River; recorded a number of archeological sites
Klinger et al (1981)	Cultural resources survey along southern section of Ditch 1 and four other ditches in the Morehouse Lowlands; No sites were reported. Testing of one site along the Castor River and testing of three sites along Ditch 19
Klinger (1983)	Background and literature search for existing data relating to cultural resources which are, or may be found within the corridor of the Ditch 19 extension. No sites were reported

TABLE 3
Selected Cultural Resources Management Studies Relevant to the
Project Area

INVESTIGATOR/REFERENCE	LOCATION AND DESCRIPTION OF WORK
C. Price (1976)	survey conducted for city of North Lilbourn; literature search and field reconnaissance; southwestern end of Sikeston Ridge
Sjoberg (1976)	survey conducted for City of Tallapoosa; literature search and field reconnaissance; Little River Lowland
J. Price, Morrow and C. Price (1978); J. Price (1980)	literature search; predictive model; field reconnaissance for route of proposed power line across Little River Lowland
Greer (1978)	cultural resources survey along pipeline route across Morehouse Lowland
Iroquois Research Institute (1978a)	cultural resources overview and predictive models for St. Francis Basin including both Little River and Morehouse Lowlands
C. Price (1979b)	survey conducted for town of Gideon; literature search and field reconnaissance; Essex Terrace
Klinger et al (1981)	survey along Lower Ditch 1, Ditch 290, Ditch 281-9 and Ditch 293 in the Morehouse Lowland; testing of one site along the Castor River and three sites along Ditch 19
Klinger (1983)	literature search for Ditch 19 extension

TABLE 4
Prehistoric and Historic Cultural Sequence in the Morehouse
and Little River Lowlands and Vicinity

PERIOD OR CULTURAL/ GROUP	PERIOD OR DATE	PHASE/ TYPE OCCUPATION	SELECTED ARTIFACT ASSOCIATIONS/ SELECTED DIAGNOSTIC ARTIFACTS
Paleo-Indian	pre-8000 B.C.	---	Fluted point forms, Clovis and Folsom-like exotic cherts
Archaic			
Early	8000-5000 B.C.	---	Dalton, very little known
Middle	5000-3000 B.C.	---	No data
Late	3000-1800 B.C.	---	Few data
Terminal	Poverty Point	O'Bryan Ridge	Large and small stemmed and notched projectile point forms; full-grooved ax; winged banner-stones; Poverty Point-like cultural manifestation
Woodland			
Early	Tchula	Pascola	Sand-tempered ceramics with pinching, punctation and incising; stemmed, contracting stemmed, notched projectile points
Middle	Marksville	La Plant (Barnes Ridge)	Zones, dentate sand-tempered ceramics and other "Hopewellian-like" materials--poorly understood
Late	Baytown	Dunklin Hoecake?	Sand-tempered Kennett Plain and Barnes Cordmarked ceramics Clay-tempered ceramics: Baytown Plain, Mulberry Creek Cordmarked, Larto Red-filmed
Terminal	Coles Creek	?	Dunklin Phase may have continued through Coles Creek Period
Mississippi	Developmental	Hayti or Early Malden Plain?	Shell-tempered ceramics; Neeley's Ferry plain and Varney Red-filmed; vessels include jars without appendages and with outflaring rims and steeply angled shoulders; hooded bottles, small arrow points
	Expansion	Cairo Lowland	Shell-tempered ceramics; Neeley's Ferry and Bell Plain; variety of decoration; small arrow points
		Pemiscot Bayou	Shell-tempered ceramics; Neeley's Ferry and Bell Plain; variety of decorative techniques; small arrow points

TABLE 4 continued
Prehistoric and Historic Cultural Sequence in the Morehouse
and Little River Lowlands and Vicinity

PERIOD OR CULTURAL GROUP	PERIOD OR DATE	PHASE/ TYPE OCCUPATION	SELECTED ARTIFACT ASSOCIATIONS/ SELECTED DIAGNOSTIC ARTIFACTS
Mississippi	Late Prehistoric/ Protohistoric	Armored (Late Nodena) (S. Williams 1978)	Bell Plain, Neeley's Ferry Plain; various applique, incised, noded, painted, and punctate types; bone "buttons"; willow leaf and triangular arrow points; snubnosed scrapers; small amount of historic trade goods
Historic Indian (Shawnee, Delaware)	Late 1700s -1820	transitory	? probably material complex like that of early American below with possible addition of bottle glass scrapers, silver and lead ornaments, ceramics
French, Spanish?	? -1790s	hunting, trapping	?
American early 19th century	1790s-1830	hunter- squatter, permanent agri- culture, trader, professional	English earthenware with pearl- ware predominate (and some creamware present) with decorative types: blue transfer printed, annular, mocha, edge- decorated, blue and earthen colored hand painted designs; American-made earthenware and stoneware crocks and bowls; amber French chalcedony gunflints of British style; glass beads (faceted and seed most common); square-cut and hand-forged nails
mid 19th century	1830s-1860s	permanent agri- culture, trader, professional	English earthenware with white- ware/ironstone predominate with decorative types: multi-color transfer printing, annular, mocha, edge-decorated, spatter, stamped, brightly colored hand- painted, flow blue, undecorated; American-made salt-glazed stone- ware crocks, percussion caps with some French chalcedony gunflints of British style; glass beads (faceted and seed); square-cut nails

TABLE 4 concluded
Prehistoric and Historic Cultural Sequence in the Morehouse
and Little River Lowlands and Vicinity

PERIOD OR CULTURAL GROUP	PERIOD OR DATE	PHASE/ TYPE OCCUPATION	SELECTED ARTIFACT ASSOCIATIONS/ SELECTED DIAGNOSTIC ARTIFACTS
late 19th century	1870-1890	permanent agri- culture, professional	English and American whiteware ceramics mostly undecorated; red and brown glazed crocks; 'bitters' bottles, fruit jars, square-cut nails
early 20th century	1890-1930	agri- culture, lumbering, professional	American-made whiteware ceramics including flow blue, gold rim banding, printed or decal forms mainly with flowers in pale colors, transfer printing; depression & carnival glass, wire nails

Evidence for Paleo-Indian occupation throughout southeast Missouri is in the form of isolated fluted point finds with no other cultural materials or data on the occupation available. Elsewhere in the southeast Missouri lowlands, Archaic Period settlements include intensively occupied midden sites (probably base settlements) usually located along river channel meanders or on slough or swamp margins; and non-midden scatters varying both in extent and in density of artifacts which are located on a number of landforms including stream levees, sand ridges, prairie blisters and on relatively low ground.

It is clear that during terminal Archaic times, Poverty Point influences reached this area. Sites near the Ditch 1 project, such as Ardeola, have produced such Poverty Point-like artifacts as baked clay balls (C. Price and J. Price 1980:31; Greer 1978:4-12; Phillips 1970:860).

It appears that during the Woodland and Mississippi period occupations the area supported relatively large populations. Although mound building and settlement in fairly large villages began during Woodland times, temple mound and fortified village construction reached its peak during the Mississippi Period. There are few data available on the nature of Woodland Period settlement. Woodland sites do occur in varying sizes with varying artifact assemblages, but there are as yet only scant data on differences in site function and on the general nature of Woodland settlement patterns in this area. The large sites tend to be situated on the higher land forms with the smaller sites again located in a variety of topographic and environmental situations (see for example J. Williams 1974:11, Map 3).

Much more information is available on Mississippi Period settlement elsewhere in southeast Missouri, and it is expected that settlement in the project area would be similar. Mississippian settlement systems usually include a large fortified civic-ceremonial center surrounded by smaller fortified villages, hamlets, farmsteads and other limited activity loci. At least the larger centers and villages tend to be situated only on tracts of sandy loam soils (J. Price 1978). There are Mississippian civic-ceremonial centers recorded in the area. For example, the Rich Woods site (23S01) is located 11.2 km (7 mi) south of Dexter, approximately 27.3 km (17 mi) from the Ditch 1 project area (see Thomas 1894; Phillips 1970). A number of smaller sites should be associated with it.

Several prehistoric sites have been recorded in the immediate vicinity of the present Ditch 1 project area, but very few data are available from the sites. The Ardeola site, is multi-component evidencing occupation from at least Late Archaic through Mississippian times (C. Price and J. Price 1980:31). The Smith site, is likewise described as multi-component with Archaic and Woodland occupations (Redfield 1971:22). 23S0359, evidencing principally a Woodland occupation, is located in "a wide flat plain with no visible relief" nearby the present Ditch 1 (Greer 1978).

A number of the larger civic ceremonial centers and villages have been reported in the general area and most of those known are located on the bordering terraces. For example, the County Line Site is located on the eastern edge of the Malden Plain, and the Lilbourn site is located on the southwestern edge of Sikeston Ridge.

The Morehouse and Little River lowlands, as was much of the rest of southeast Missouri, appear to have been abandoned following Expansion Mississippian times, ca 1450 A.D. Table 4 presents a summary of the historic period sequence and selected artifact associations. The artifact data are derived from work conducted throughout southeast Missouri. Regional histories have provided some information on historic period settlement.

The Morehouse Lowlands seem to have been abandoned by indigenous groups following late prehistoric times, and intensive settlement did not begin until late historic times. There may have been earlier activities in the general area by European and/or Indian hunters and trappers, but the available literature provides little information on this early period. Although there are references to widely scattered settlements and remnant populations of displaced eastern Indian groups during the latter part of the 18th and early 19th centuries in southeast Missouri, none of the more permanent settlements was reported to have been in the Morehouse Lowlands (Goodspeed 1888:236-237; Houck 1908(I):207-223; J. Price, Morrow and C. Price 1978:74-87; Klinger et al 1981). There are, however, reported Shawnee and Delaware villages on Crowley's Ridge, near Kennett on the Malden Plain and near New Madrid on Sikeston Ridge. Given the known pattern of ranging out during hunting trips and the use of the lowlands for hunting elsewhere in southeast Missouri it is possible that temporary hunting camps would have been established in the lowlands themselves (J. Price, Morrow and C. Price 1978:74-87).

Relatively permanent Euro-American settlement likewise was restricted to the higher land forms in southeast Missouri and because of the swampy nature of the Morehouse Lowlands, settlement in the area

came relatively late. Earliest settlement locations are often indicated by the distribution of Spanish Land grants in southeast Missouri (although these do not indicate the presence of hunter-squatter settlements). Such grants are known along Sikeston Ridge to the east none are recorded for the Morehouse Lowland or along the Malden Plain to the west. Goodspeed (1888:308) notes that settlement in New Madrid County did not extend much beyond the Little River until between 1820 and 1830. Settlement during the pre-1870 period took the form of dispersed family farmsteads. The economy was based on agriculture and on the export of furs, pelts and lumber (J. Price, Morrow and C. Price 1978:124; Campbell 1874).

Previous work on early American agricultural settlement in southeast Missouri suggests that the earliest settlements tend to be located with respect to both arable soils and established travel routes -- either roads or navigable waterways (C. Price and J. Price 1977). Although arable soils are present in at least limited extent on the higher natural levees in the lowlands, the difficulty of travel in the inundated lowlands (absence of roads until late and the extreme difficulty of travel in navigating the streams) was probably a major factor in restricting early settlement.

No Civil War activity was reported for the lowlands in the vicinity of the project area. There were, however, skirmishes at towns nearby on the Malden Plain (as at Clarkton located 59.5 km/37 mi southwest of the project area; see C. Price 1979a:23) and in the New Madrid area. It is likely that most Civil War activity in the lowlands consisted of the movement of troops and supplies along roads.

After the Civil War, during the late 19th century, the railroad was constructed along the edge of Crowley's Ridge and lumbering became an important industry. Following the timbering operations, drainage projects were begun, and the lowlands were opened to large scale commercial agriculture (Iroquois Research Institute 1978b). Much of the Missouri lowlands was farmed under the tenant or sharecropper system and it is likely that this pattern was followed in the Morehouse Lowland. After drainage began, additional land was available for settlement as well for agriculture and there was, at least in other southeast Missouri areas, an expansion of settlement in the lowlands. Farmers and tenant dwellings were located not only on the highest ridges and landforms, but also in areas which had been seasonally inundated prior to drainage. No historic period sites have been reported in the project area. There are exceptionally limited data on historic period settlement patterns in the vicinity because of the lack of attention paid to historic sites prior to the more recent cultural resource management surveys conducted in the lowlands.

There have been no regional architectural studies in southeast Missouri concerned with identifying patterns in architectural traditions in rural or folk housing (Iroquois Research Institute 1978b:11-13). Undoubtedly, the earlier structures were of hewn log construction, as was the case elsewhere in Missouri during the period of early settlement. Both single and double pen structures were common, but few log structures remain standing in the lowland today.

Following the establishment of saw mills during the late 19th century, wood frame structures became more common and a greater variety of housing forms came into use. The pyramid house (a square structure with a pyramid roof form associated with the logging industry ca 1890-

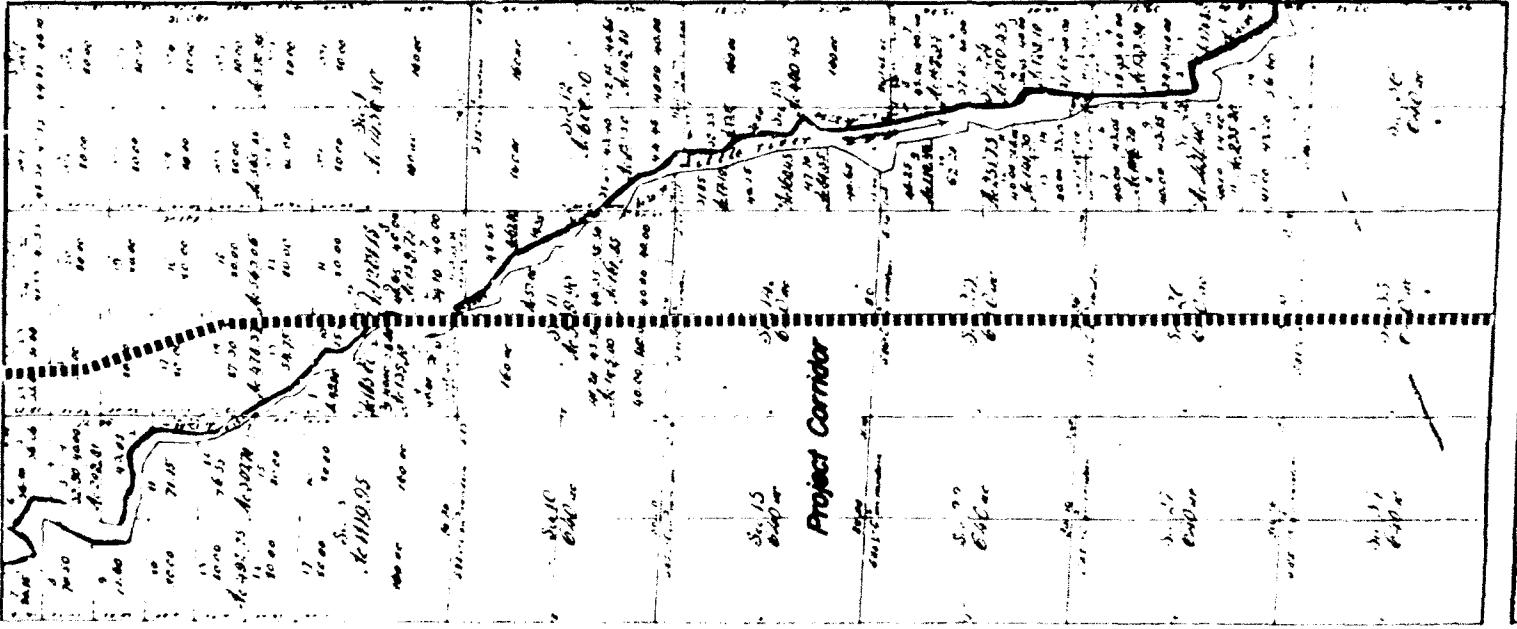
1920s), one story T and L forms, the shotgun, and the one-room shack with a rear shed room are among the forms found elsewhere in the Missouri lowland. The T and L forms are most often associated with the land holders. The small shack with shed was perhaps one of the more common forms associated with the tenant farmer (Iroquois Research Institute 1978b:13).

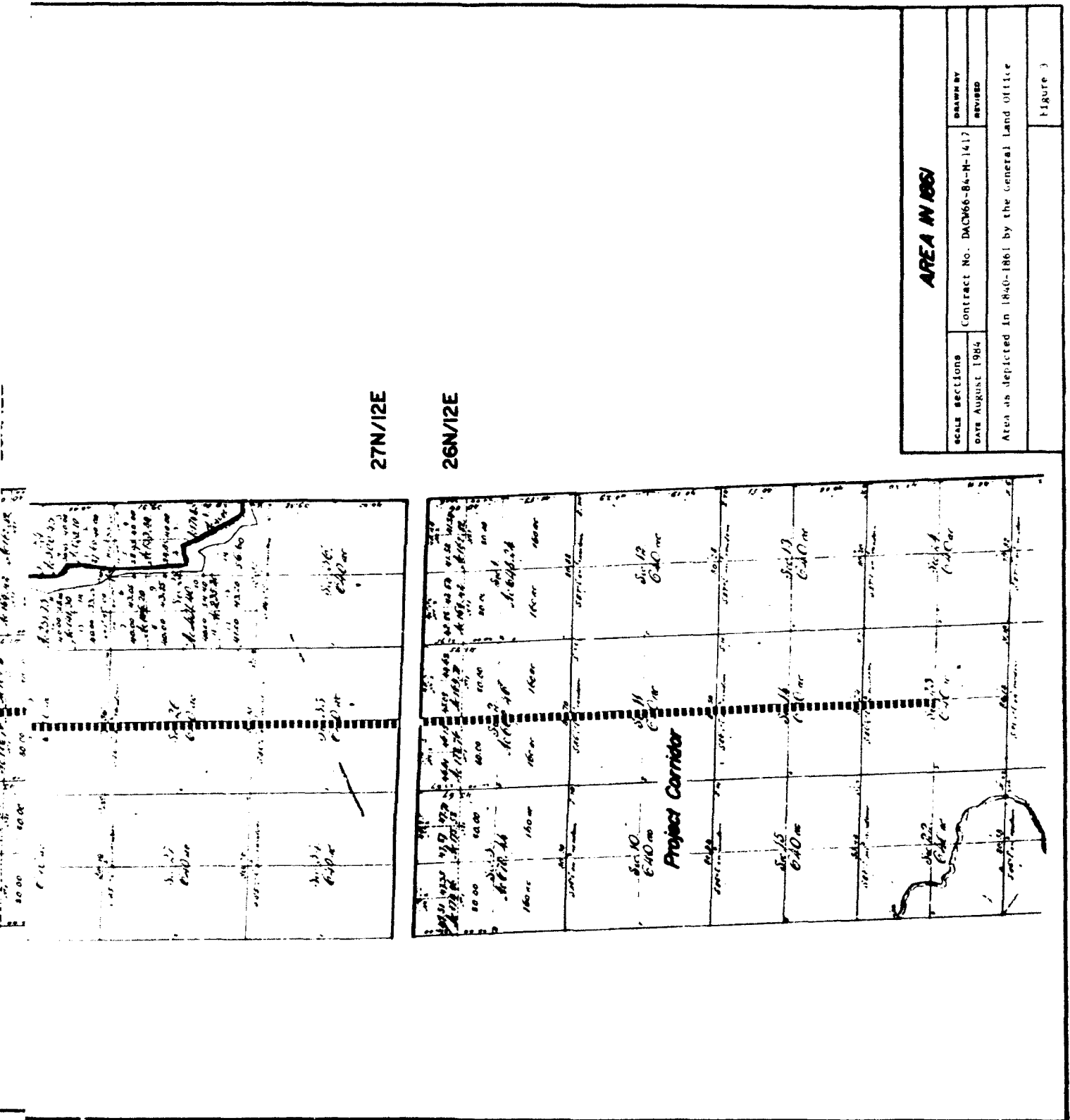
REVIEW OF THE GLO DATA

The project townships were surveyed by the General Land Office between 1817 and 1857. No improvements were recorded by the GLO within the Ditch 1 corridor. With few exceptions there are no improvements such as houses or other buildings, cleared fields or roads or trails noted on the plats themselves (Table 5, Figure 3). Only T26N/R12E has any improvements depicted. These include a road beginning in Section 29 which runs from the northwest to the southeast past a house in Section 28, then through Section 33 and then along the Castor River in Section 34. Several other smaller roads appear on the plat but no other buildings. Three cultivated fields appear in sections 7, 8 and 17. None of these improvements are within the project corridor. The general setting as mapped by the contract surveyor suggests a continuous flat bottom land interspred with areas of cypress swamp.

TABLE 5
Summary of Data from GLO Plats

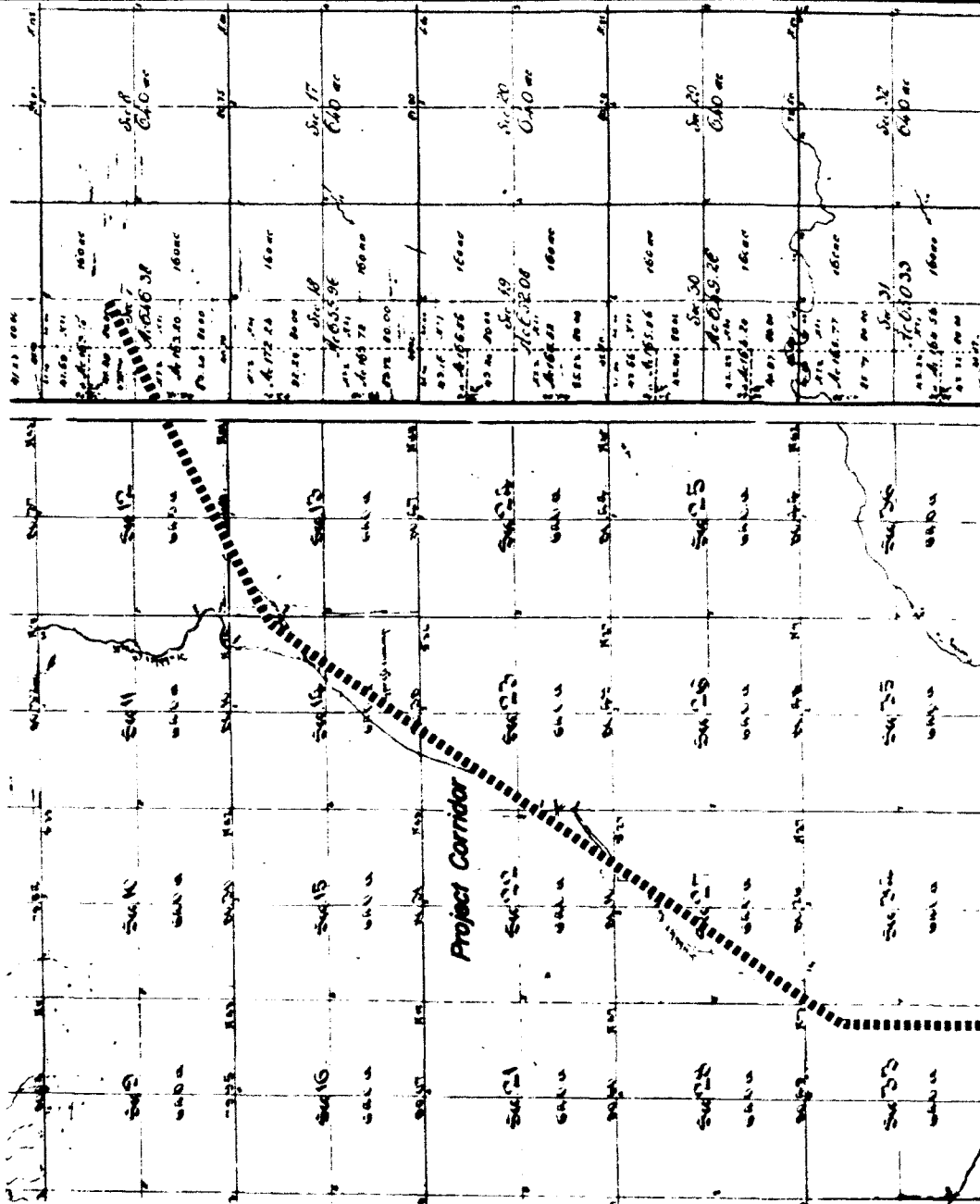
TOWNSHIP	RANGE	SEC.	CULTURAL OR ENVIRONMENTAL FEATURE
T29N	R13E	7	----
T29N	R12E	12, 13	bayou
		14	confluence of bayou and Hubbles Creek which then flows through a cypress swamp
		23	Hubbles Creek flowing through cypress swamp
		22	cypress swamp ends, Hubbles Creek continues
		27	Hubbles Creek terminates or begins?
		34	----
		33	East Fork of White Water River in the southwest corner of the section at least 1/2 mi to the west of the project corridor
T28N	R12E	4	East Channel of White Water River paralleling the project corridor less than 1/2 mi to the west, Caney Creek flowing from the northeast to the southwest cuts across the southeast corner of the section near the project corridor
		9	East Channel of White Water River flowing to the south and still paralleling the project corridor, Caney Creek cuts across the project corridor before emptying into the East Channel of the White Water River, another stream called "Hubbles Creek" rises in the southeast quarter of this section cutting across the project corridor in the middle of this quarter section and parallels the course of Caney Creek.



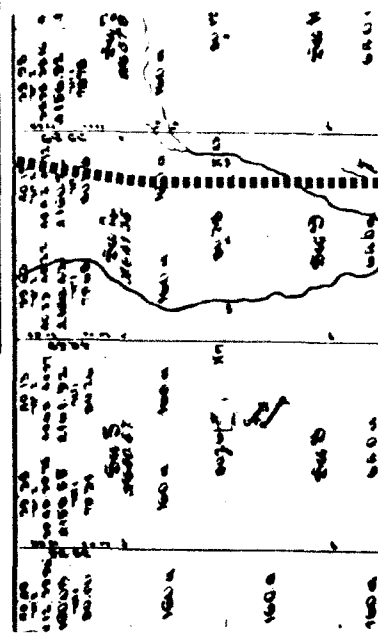


29N/12E

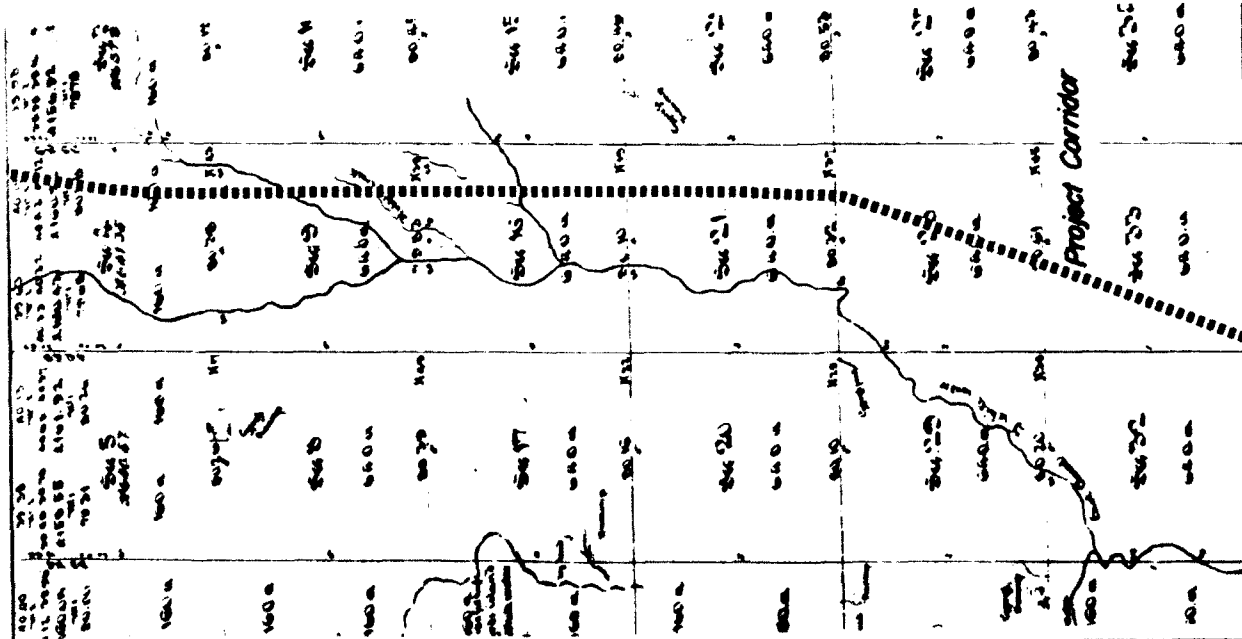
29N/13E



28N/12E



28N/12E



AREA IN 1840-1852

SCALE: SECTIONS	CONTRACT NO. DACMBB-84-M-1417	DRAWN BY
DATE: August 1984	REVISED	
Area as depicted in 1840-1861 by the General Land Office		
Figure 3 cont.		

TABLE 5 concluded
Summary of Data from GLO Plats

TOWNSHIP	RANGE	SEC.	CULTURAL OR ENVIRONMENTAL FEATURE
T28N	R12E	16	the "Hubbles Creek" which rises in the above section empties into the East Channel of the White Water River which continues to parallel the project corridor, an intermittent stream and an unnamed stream merge in the middle of the project corridor before flowing to the southwest and emptying into the East Channel
		21	the project corridor continues to parallel the East Channel of the White Water River flowing to the south
		28	in the northwest quarter section the East Channel of the White Water River turns to the southwest
		33	----
T27N	R12E	2	Little River flowing from the northwest to the southeast crosses the project corridor at about the section line between sections 2 and 11
		11	Little River continues to flow to the southeast
		14, 23, 26	----
		35	two sections of a road appear on the west and east side of this section separated from each other by about 1/2 mi both sections run southwest-northeast
T26N	R12E	2, 11, 14, 23	----

Other natural features noted on the plat include higher ground west of the White Water River in the far western portion of T29N/R12E. Caney Creek is also shown in the southeast corner of the township. In T29N/R12E tributaries of the East Channel of the White Water River including Hubbles Creek are depicted. In T29N/R13E a small number of drainages begin and end without emptying into larger bodies of water.

In T29N/R12E several cypress swamps are shown along the White Water River (Little River) and several of its tributaries to the west. Cypress swamps are also shown in T28N/R12E. Byrd's Island (an area of high ground -- 150 ft) is also in the western portion of this particular township. In T27N/R12E the terrain is labeled "over flow land along Little River". In addition, two land holdings belonging to Hugh White and Andrew Ramsey appear in the northeast corner of T29N/R12E.

REVIEW OF THE USGS DATA

The project extends over 4 USGS 7.5' quadrangle maps (Chaffee, Vanduser, Oran and Morehouse all dated 1963 with Chaffee photorevised in 1978) and 2 USGS 15' quad maps (Morley and Sikeston published in 1963). In addition to the actual project locations, the maps also include identifications of then-existing structures which could be affected if they extend to within the proposed project corridors.

Table 6 summarizes the USGS data. Eleven structures are identified within 350 ft of the existing centerline of Ditch 1. Of these 11, 9 are buildings, 1 is a railroad (Missouri-Pacific) and 1 is a transmission line. Seven structures are identified as being within 350 ft of the centerline or on the edge of the proposed corridor. Five of these structures are buildings while the other 2 are sewage disposal structures. From these data it is not possible to determine which of the buildings are still occupied or which of the structures are still in use.

TABLE 6
Summary of Data from USGS Quadrangle maps

TOWNSHIP	RANGE	SECTION	SIDE OF PROJECT	NO. AND TYPE OF STRUCTURES	RELATIONSHIP TO PROJECT
T29N	R13E	7	east	2 sewage disposal	within 350 ft or edge
T29N	R12E	12	east	2 buildings	within 350 ft or edge
		13	west	1 building	within 350 ft
		14	---	0	---
		23	---	0	---
		22	e & w	1 railroad	within 350 ft
		27	---	0	---
		34	---	0	---
		33	---	0	---
T28N	R12E	4	---	0	---
		9	west	1 building	within 350 ft
		16	---	0	---
		21	---	0	---
		28	west	2 buildings	within 350 ft
		33	---	0	---
T27N	R12E	2	west	1 building	within 350 ft or edge
		11	---	0	---
		14	---	0	---
		23	east	1 building & 1 transmission line	within 350 ft within 350 ft
		26	east	3 buildings	within 350 ft
		35	---	0	---
T26N	R12E	2	west	1 building	within 350 ft
		11	west	2 buildings	within 350 ft or edge
		14	---	0	---
		23	---	0	---

REVIEW OF THE DNR DATA

On 2 August 1984, Richard P. Kandare visited the Missouri Department of Natural Resources and reviewed the current files relating to the Ditch 1 project area. The results of this records search are summarized in Table 7. DNR has no recorded sites within the Ditch 1 project corridor. Three sites are, however, on record in 2 sections through which the project corridor passes.

TABLE 7
Summary of DNR Records
(as of 2 August 1984)

TOWNSHIP	RANGE	SECTION	SITES IN VICINITY	SITES IN PROJECT AREA
T29N	R13E	7	No sites recorded	No sites recorded
T29N	R12E	12	No sites recorded	No sites recorded
		13	No sites recorded	No sites recorded
		14	No sites recorded	No sites recorded
		23	No sites recorded	No sites recorded
		22	No sites recorded	No sites recorded
		27	No sites recorded	No sites recorded
		34	No sites recorded	No sites recorded
		33	No sites recorded	No sites recorded
T28N	R12E	4	23ST95	No sites recorded
		9	No sites recorded	No sites recorded
		16	No sites recorded	No sites recorded
		21	No sites recorded	No sites recorded
		33	No sites recorded	No sites recorded
T27N	R12E	2	No sites recorded	No sites recorded
		11	No sites recorded	No sites recorded
		14	23S0367, 23S0370	No sites recorded
		23	No sites recorded	No sites recorded
		26	No sites recorded	No sites recorded
		35	No sites recorded	No sites recorded
T26N	R12E	2	No sites recorded	No sites recorded
		11	No sites recorded	No sites recorded
		14	No sites recorded	No sites recorded
		23	No sites recorded	No sites recorded

23ST95 is located in Scott County in T28N/R12E near the Whitewater River. Recorded by James Hopgood for Sam G. Jones, the site is described as a ridge covering approximately 20 acres (8 ha) covered with lithic debris including projectile points and other flaked artifacts. The prehistoric occupations at the site have not been determined but may be preceramic. 23S0367 and 23S0370 were recorded by John Greer (1978) during an archeological survey that was conducted across southeast Missouri along a proposed Texas Eastern pipe line.

REVIEW OF THE ASM DATA

Data for 23S0367, 23S0370 and 23S095 on file with the Department of Natural Resources (see above) are also in the Archaeological Survey of Missouri records (Table 8). Sites 23S0367 and 23S095 are both of unknown prehistoric affiliation. 23S0370 is an historic residence with an associated trash dump dating from ca 1890-1910.

In addition to these three sites ASM has on record four sites (23ST202, 23ST199, 23ST101 and 23ST201) reported within three other project sections. Two of these (23ST201 and 23ST202) are historic residences with associated scattered debris. 23ST199 is reported to

TABLE 8
Search of Archaeological Survey of Missouri Records
(As of 28 August 1984)

TOWNSHIP	RANGE	SECTION	SITES IN VICINITY	SITES IN PROJECT AREA
T29N	R13E	7	23ST101, 23ST201	No sites recorded
T29N	R12E	12	23ST202	23ST202 possibly within 350' or edge
		13	23ST199	No sites recorded
		14	No sites recorded	No sites recorded
		23	No sites recorded	No sites recorded
		22	No sites recorded	No sites recorded
		27	No sites recorded	No sites recorded
		34	No sites recorded	No sites recorded
		33	No sites recorded	No sites recorded
T28N	R12E	4	23ST95	No sites recorded
		9	No sites recorded	No sites recorded
		16	No sites recorded	No sites recorded
		21	No sites recorded	No sites recorded
		33	No sites recorded	No sites recorded
T27N	R12E	2	No sites recorded	No sites recorded
		11	No sites recorded	23S0367, 23S0370
		14	No sites recorded	No sites recorded
		23	No sites recorded	No sites recorded
		26	No sites recorded	No sites recorded
		35	No sites recorded	No sites recorded
T26N	R12E	2	No sites recorded	No sites recorded
		11	No sites recorded	No sites recorded
		14	No sites recorded	No sites recorded
		23	No sites recorded	No sites recorded

contain burials and Woodland Period cord marked pottery. 23ST101 is recorded to be a mound which is now probably destroyed. Only 23ST202 may be on the edge or near the project corridor -- the rest are definitely outside the corridor.

NATURE OF THE CULTURAL RESOURCES WITHIN THE PROJECT CORRIDOR

From our review of existing literature, unpublished extant data, unpublished manuscripts and from our general knowledge of the nature of cultural resources which occur in the region, we have developed a series of predictive statements which focus specifically on the Ditch 1 project area. Future field investigation should be aimed at refining, discarding or supporting these hypotheses.

1. Small specialized activity-extractive sites may be present within the proposed project corridor
2. Recent historic dumping sites (post A.D. 1920) will be the predominant site type observed in the project corridor.

3. Modern agricultural practices (e.g., clearing, land leveling and intensive cultivation) have damaged and/or destroyed any cultural resources which may be present.

4. Based on general experience, prehistoric sites which may be present within the project area probably were affected by unscientific collecting activities.

5. Based on the 2 August 1984 records check of the DNR data and 28 August 1984 records check of ASM data, no prehistoric archeological sites are currently on record on the edge or adjacent to the project corridor.

6. The presence or absence of certain landforms within the project corridor increases/decreases the likelihood of locating cultural resources:

a. The presence of natural levee and terrace soils along portions of the project corridor increases the probability of sites.

b. The absence of higher landforms in other parts of the project corridor decreases the likelihood of locating cultural resources.

7. The areas along the project corridor characterized by higher elevations and parts of natural levee systems have a high probability of containing prehistoric and historic cultural resources:

a. Sites which do occur in these areas will reflect short term specialized activities, as well as more permanent occupations.

b. Some sites found in these areas may also contain intact subsurface remains as well as plowzone deposits.

8. Based on the 2 August 1984 records check of the Missouri Department of Natural Resources records, it is unlikely that any historic sites of architectural or historic significance will be located within the project corridor.

9. Based on our review of the General Land Office maps, it is not likely that any relatively early historic archeological sites are present within the project corridor.

10. Based on the 28 August 1984 of the ASM data there is a historic residence with associated debris (23ST202) on the edge or adjacent to the project corridor and it is likely that other similar sites of this period will be found within or on the edge of the project corridor. Based on our review of the relevant USGS quadrangles, there are several historic building sites within the project corridor:

- a. Many of these building sites will still be standing or in use.
 - b. Many of these building sites will have been dismantled or otherwise destroyed, leaving only archeological and archival evidence for their existence.
 - c. Few, if any, of these historic resources will have National Register significance.
11. Most of the archeological sites recorded during future field surveys will be small, shallow, plowzone lithic scatters with few or no diagnostic artifacts.
 12. There are no Paleo-Indian sites on record within the project corridor and it is not likely that other loci of this prehistoric cultural period exist within the project limits.
 13. There are no Dalton (Early Archaic Period) sites on record within the project corridor and it is not likely that other loci of this prehistoric cultural period exist within the project limits.
 14. There are no Middle or Late Archaic Period sites on record within the project corridor and it is not likely that other loci of this prehistoric cultural period exist within the project limits.
 15. Sites which may be present representing the Woodland Period will exhibit pottery of the Barnes (sand-tempered) tradition rather than of the Baytown (grog-tempered) tradition.
 16. Lithic cultural materials have been recovered and/or observed at all previously recorded prehistoric sites in the vicinity and it is very probable that lithic materials will predominate the cultural assemblages recovered at any newly discovered prehistoric sites.

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APPENDIX A

(SCOPE OF WORK)

Cultural Resource Literature Search of Ditch 1, Scott and Stoddard Counties, Missouri.

1. GENERAL.

1.1. The Contractor shall conduct a background and literature search of Ditch 1, Scott and Stoddard Counties, Missouri. These tasks are in partial fulfillment of the Memphis District's obligations under the National Historic Preservation Act of 1966 (P.L. 89-665), as amended; the National Environmental Policy Act of 1969 (P.L. 91-190); Executive Order 11593, "Protection and Enhancement of Cultural Environment," 13 May 1971 (36 F.R. 3921); Preservation of Historic and Archaeological Data, 1974 (P.L. 93-291), as amended, and the Advisory Council on Historic Preservation, "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800).

1.2. Personnel Standards.

a. The Contractor shall utilize a systematic, interdisciplinary approach to conduct the study. Specialized knowledge and skills will be used during the course of the study to include expertise in archeology, history, architecture, geology and other disciplines as required. Techniques and methodologies used for the study shall be representative of the state of current professional knowledge and development.

b. The following minimal experiential and academic standards shall apply to personnel involved in cultural resources investigations described in this Scope of Work:

(1) Archeological Project Directors or Principal Investigator(s) (PI). Persons in charge of an archeological project or research investigation contract, in addition to meeting the appropriate standards for archeologist, must have a publication record that demonstrates extensive experience in field project formulation, execution and technical monograph reporting. Suitable professional references may also be made available to obtain estimates regarding the adequacy of prior work. If prior projects were of a sort not ordinarily resulting in a publishable report, a narrative should be included detailing the proposed project director's previous experience along with references suitable to obtain opinions regarding the adequacy of this earlier work.

2. Archeologist. The minimum formal qualifications for individuals practicing archeology as a profession are a B.A. or B.S. degree from an accredited college or university, followed by a minimum of two years of successful graduate study with concentration in anthropology and specialization in archeology and at least two summer field schools or their

equivalent under the supervision of archeologists of recognized competence. A Master's thesis or its equivalent in research and publication is highly recommended, as in the M.A. degree.

3. Other Professional Personnel. All non-archeological personnel utilized for their special knowledge and expertise must have a B.A. or B.S. degree from an accredited college or university, followed by a minimum of one year of successful graduate study with concentration in appropriate study.

4. Other Supervisory Personnel. Persons in any archeological supervisory position must hold a B.A., B.S. or M.A. degree with a concentration in archeology and a minimum of 2 years of field and laboratory experience.

5. Crew Members and Lab Workers. All crew members and lab workers must have prior experience compatible with the tasks to be performed under this contract. An academic background in archeology/anthropology is highly recommended.

c. All operations shall be conducted under the supervision of qualified professionals in the discipline appropriate to the data that is to be discovered, described or analyzed. Vicar of personnel involved in project activities may be required by the Contracting Officer at anytime during the period of service of this contract.

1.3. The Contractor shall designate in writing the name of the Principal Investigator. In the event of controversy or court challenge, the Principal Investigator shall be available to testify with respect to report findings.

1.4. The Contractor shall keep standard records which may be reviewed by the Contracting Officer. These records shall include field notes, state site survey forms and any other cultural resource forms and/or records, field maps and photographs necessary to successfully implement requirements of this Scope of Work.

1.5. To conduct the field investigation, the Contractor will obtain all necessary permits, licenses, and approvals from all local, state and Federal authorities. Should it become necessary in the performance of the work and services of the Contractor to secure the right of ingress and egress to perform any of the work required herein on properties not owned or controlled by the Government, the Contractor shall secure the consent of the owner, his representative, or agent, prior to effecting entry on such property.

1.6. Innovative approaches to data location, collection, description and analysis, consistent with other provisions of this contract and the cultural resources requirements of the Government, are encouraged.

1.7. The Contractor shall furnish expert personnel to attend conferences and furnish testimony in any judicial proceedings involving the archeological and historical study, evaluation, analysis and report. When

required, arrangements for their services and payment, therefore, will be made by representatives of either the U.S. Army Corps of Engineers or the Department of Justice.

1.8. The Contractor, prior to the acceptance of the final report, shall not release any sketch, photograph, report or other material of any nature obtained or prepared under this contract without specific written approval of the Contracting Officer.

1.9. The extent and character of the work to be accomplished by the Contractor shall be subject to the general supervision, direction, control and approval of the Contracting Officer. The Contracting Officer may have a representative of the Government present during any or all phases of the described cultural resource project.

2. STUDY AREA.

2.1. The Ditch 1 Project is located in Scott and Stoddard Counties, Missouri. The expected right-of-way will be 350 feet (106.68 meters) on each side of the ditch centerline, 700 feet (213.36 meters) total width. Possible impact areas are immediately adjacent to Ditch 1. The project can be located on the Morley and Sikeston, Missouri 7.5 minute quadrangle maps. The attached map shows the general limits of the project.

3. DEFINITIONS.

3.1. "Cultural resources" are defined to include any buildings, site, district, structure, object, data, or other material relating to the history, architecture, archeology, or culture of an area.

3.2. "Background and Literature Search" is defined as a comprehensive examination of existing literature and records for the purpose of inferring the potential presence and character of cultural resources in the study area. The examination may also serve as collateral information to field data in evaluating the eligibility of cultural resources for inclusion in the National Register of Historic Places or in ameliorating losses of significant data in such resources.

3.3. "Intensive Survey" is defined as a comprehensive, systematic, and detailed on-the-ground survey of an area, of sufficient intensity to determine the number, types, extent and distribution of cultural resources present and their relationship to project features.

3.4. "Mitigation" is defined as the amelioration of losses of significant prehistoric, historic, or architectural resources which will be accomplished through preplanned actions to avoid, preserve, protect, or minimize adverse effect upon such resources or to recover a representative sample of the data they contain by implementation of scientific research and other professional techniques and procedures. Mitigation of losses of cultural resources includes, but is not limited to, such measures as: (1) recovery and preservation of an adequate sample of archaeological data to allow for analysis and published interpretation of the cultural and environmental conditions prevailing at the time(s) the area was utilized by man; (2) recording, through architectural quality photographs and/or measured drawings of buildings, structures, districts, sites and objects and deposition of such documentation in the Library of Congress as a part of the National Architectural and Engineering Record; (3) relocation of buildings, structures and objects; (4) modification of plans or authorized projects to provide for preservation of resources in place; (5) reduction or elimination of impacts by engineering solutions to avoid mechanical effects of wave wash, scour, sedimentation and related processes and the effects of saturation.

3.5. "Reconnaissance" is defined as an on-the-ground examination of selected portions of the study area, and related analysis adequate to assess the general nature of resources in the overall study area and the probable impact on resources of alternate plans under consideration. Normally reconnaissance will involve the intensive examination of not more than 15 percent of the total proposed impact area.

3.6. "Significance" is attributable to those cultural resources of historical, architectural, or archeological value when such properties are included in or have been determined by the Secretary of the Interior to be eligible for inclusion in the National Register of Historic Places after evaluation against the criteria contained in How to Complete National Register Forms.

3.7. "Testing" is defined as the systematic removal of the scientific, prehistoric, historic, and/or archeological data that provide an archeological or architectural property with its research or data value. Testing may include controlled surface survey, shovel testing, profiling, and limited subsurface test excavations of the properties to be affected for purposes of research planning, the development of specific plans for research activities, excavation, the development of specific plans for research activities, preparation of notes and records, and other forms of physical removal of data and the material analysis of such data and material. Preparation of reports on such data and material and dissemination of reports and other products of the research. Subsurface testing shall not proceed to the level of mitigation.

3.8. "Analysis" is the systematic examination of material data, environmental data, ethnographic data, written records, or other data which

may be requisite to adequately evaluating those qualities of cultural loci which contribute to their significance.

4. GENERAL PERFORMANCE SPECIFICATIONS.

4.1. The Contractor shall prepare a draft and final report detailing the results of the study and subsequent recommendations.

4.2 Background and Literature Search.

a. This task shall include an examination of the historic and prehistoric environmental setting and cultural background of the study area and shall be of sufficient magnitude to achieve a detailed understanding of the overall cultural and environmental context of the study area.

b. Information and data for the literature search shall be obtained, as appropriate, from the following sources: (1) Scholarly reports - books, journals, theses, dissertations and unpublished papers; (2) Official Records - Federal, state, county and local levels, property deeds, public works and other regulatory department records and maps; (3) Libraries and Museums - both regional and local libraries, historical societies, universities, and museums; (4) Other repositories - such as private collections, papers, photographs, etc.; (5) Archeological site files at local universities, the State Historic Preservation Office, the State Archeologist; (6) Consultation with qualified professionals familiar with the cultural resources in the area, as well as consultation with professionals in associated areas such as history, sedimentology, geomorphology, agronomy, and ethnology.

c. The Contractor shall include as an appendix to the draft and final reports written evidence of all consultation and any subsequent response(s), including the dates of such consultation and communications.

d. The background and literature search shall be performed in such a manner as to facilitate the construction of predictive statements (to be included in the study report) concerning the probable quantity, character, and distribution of cultural resources within the project area. In addition, information obtained in the background and literature search should be of such scope and detail as to serve as an adequate data base for subsequent field work and analysis in the study area undertaken for the purpose of discerning the character, distribution and significance of specific identified cultural resources.

e. In order to accomplish the objectives described in paragraph 4.02.d., it will be necessary to attempt to establish a relationship between landforms and the patterns of their utilization by successive groups of human inhabitants. This task should involve defining and describing various zones of the study area with specific reference to such variables as past topography, potential food resources, soils, geology, and river channel history.

5. GENERAL REPORT REQUIREMENTS.

5.1. The primary purpose of the cultural resources report is to serve as a planning tool which aids the Government in meeting its obligations to preserve and protect our cultural heritage. The report will be in the form of a comprehensive, scholarly document that not only fulfills mandated legal requirements but also serves as a scientific reference for future cultural resources studies. As such, the report's content must be not only descriptive but also analytic in nature.

5.2. Upon completion of all research, the Contractor shall prepare report detailing the work accomplished and the results.

5.3. The report shall include, but not necessarily be limited to, the following sections and items:

a. Title Page. The title page should provide the following information; the type of task undertaken, the cultural resources which were assessed (archeological, historical, architectural); the project name and location (county and state); the date of the report; the Contractor's name; the purchase order number; the name of the author(s) and/or the Principal Investigator; and the agency for which the report is being prepared.

b. Abstract. The abstract should include a summary of the number and types of resources which were discovered, results of activities and the recommendations of the Principal Investigator.

c. Table of Contents.

d. Introduction. This section shall include the purpose of the report; a description of the proposed project; a map of the general area; a project map; and the dates during which the task was conducted.

e. Environmental Content. This section shall contain, but not be limited to, a discussion of probable past floral and faunal characteristics of the project area. Since data in this section will be used in the evaluation of specific cultural resource significance, it is imperative that the quantity and quality of environmental data be sufficient to allow detailed analysis of the relationship between past cultural activities and environmental variables.

f. Previous Research. This section shall describe previous research which may be useful in deriving or interpreting relevant background research data, problem domains, or research questions and in providing a context in which to assess the significance of cultural resources.

g. Literature Search and Personal Interviews. This section shall discuss the results of the literature search, including specific data sources, and personal interviews which are conducted during the course of investigations.

h. Conclusions and Recommendations. This section shall contain the recommendations of the Principal Investigator, regarding all contract activities. Conclusions derived from testing activities concerning the nature, quantity and distribution of cultural items should be used in describing the probable impact of project work on cultural resources.

i. Reference (American Antiquity Style).

j. Appendices (Maps, Correspondence, etc.). A copy of this Scope of Work shall be included as an appendix in all reports.

5.4. The above items do not necessarily have to be discrete sections; however, they should be readily discernable to the reader. The detail of the above items may vary somewhat with the purpose and nature of the study.

5.5. In order to prevent potential damage to cultural resources, no information shall appear in the body of the report which would reveal precise resource location. All maps which indicate or imply precise site locations shall be included in reports as a readily removable appendix (as: envelope).

5.6. No logo or other such organizational designation shall appear in any part of the report (including tabular figures) other than the title page.

5.7. Unless specifically authorized by the Contracting Officer, all reports shall utilize permanent site numbers assigned by the state in which the study occurs.

5.8. All appropriate information (including typologies and other classificatory units) not generated in these purchase order activities shall be suitably referenced.

5.9. Information shall be presented in textual, tabular, and graphic forms, whichever are most appropriate, effective and advantageous to communicate necessary information. All tables, figures and maps appearing in the report shall be of publishable quality.

5.10. Any abbreviated phrases used in the text shall be spelled out when the phrase first occurs in the text. For example use "State Historic Preservation Officer (SHPO)" in the initial reference and thereafter "SHPO" may be used.

5.11. The first time the common name of a biological species is used it should be followed by the scientific name.

5.12. In addition to street addresses or property names, sites shall be located on the Universal Transverse Mercator (UTM) grid.

5.13. All measurements should be metric. If the Contractor's equipment is in the English system, then the metric equivalent should follow in parentheses.

5.14. 4. appropriate, diagnostic, and/or unique artifacts, cultural resources or their contents shall be shown by drawings or photographs.

5.15. Black and white photographs are preferred except when color changes are important for understanding the data being presented. No instant type photographs may be used.

5.16. Negatives of all black and white photographs and/or color slides of all places included in the final report shall be submitted.

6. SUBMITTALS.

6.1. The Contractor shall, unless delayed due to causes beyond his fault or negligence, complete all work and services under the purchase order within the following time limitations after receipt of notice to proceed.

a. Four (4) copies of the draft report will be submitted within 30 calendar days following receipt of notice to proceed.

b. The Contractor shall submit under separate cover, four copies of appropriate 15' quadrangle maps (7.5' when available) and other site drawings which show exact boundaries of all cultural resources within the project area and their relationship to project features, and single copies of all forms, records and photographs described in paragraph 1.04.

c. The Government shall review the draft report and provide comments to the Contractor within 20 calendar days after receipt of the draft report.

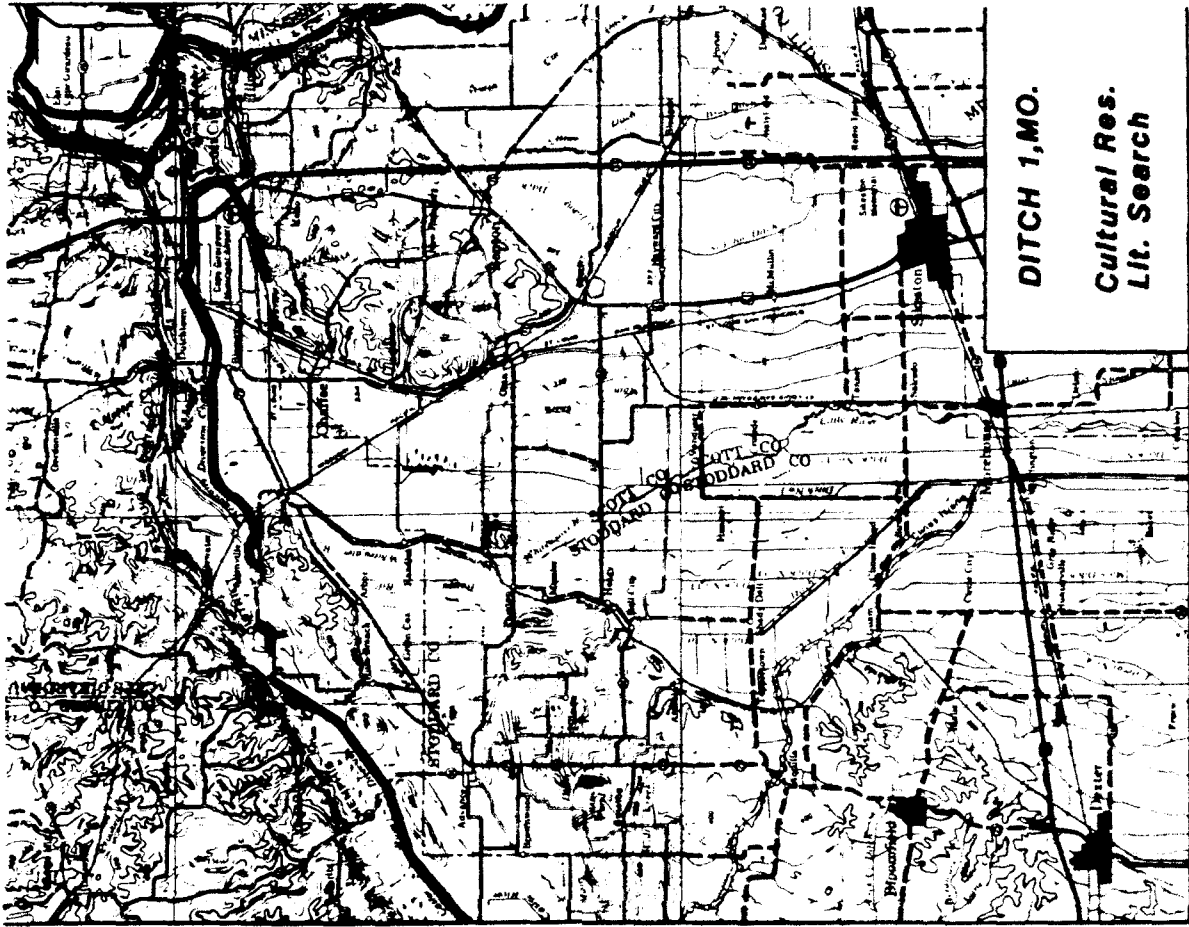
d. An original and 25 copies of the final report shall be submitted within 20 calendar days following the Contractor's receipt of the Government's comments on the draft report.

6.2. If the Government review exceeds 30 calendar days, the period of service of the purchase order shall be automatically extended on a day-by-day basis equal to any additional time required by the Government for review.

a. All maps which indicate or imply actual site locations shall be included in reports as a readily removable appendix (as: envelope). In order to prevent potential damage to cultural resources, no information shall appear in the body of the report which would suggest resource location.

b. No logo or other such organizational designation shall appear in any part of the report (including tables or figures) other than the title page.

6.3. At any time during the period of service of this purchase order, upon the written request of the Contracting Officer, the Contractor shall submit, within 30 calendar days, any portion or all field records described in paragraph 1.4 without additional cost to the Government.



7. SCHEDULE.

The Contractor shall, unless delayed due to causes beyond his control and without his fault or negligence, complete all work and services under this purchase order within 70 days after receipt of notice to proceed.

8. METHOD OF PAYMENT.

8.1. Upon satisfactory completion of work by the Contractor, in accordance with the provisions of this purchase order, and its acceptance by the Contracting officer, the Contractor will be paid the amount of money indicated in Block 25 of the purchase order.

8.2. If the Contractor's work is found to be unsatisfactory and if it is determined that fault or negligence on the part of the Contractor or his employees has caused the unsatisfactory condition, the Contractor will be liable for all costs in connection with correcting the unsatisfactory work. The work may be performed by Government forces or Contractor forces at the direction of the Contracting Officer. In any event, the Contractor will be held responsible for all costs required for correction of the unsatisfactory work, including payments for services, automotive expenses, equipment rental, supervision, and any other costs in connection therewith, where such unsatisfactory work is deemed by the Contracting Officer to be the result of carelessness, incompetent performance or negligence by the Contractor's employees. The Contractor will not be held liable for any work or type of work not covered by this purchase order.

8.3. Prior to settlement upon termination of the purchase order, and as a condition precedent thereto, the Contractor shall execute and deliver to the Contracting Officer a release of all claims against the Government arising under or by virtue of the purchase order, other than such claims, if any, as may be specifically accepted by the Contractor from the operation of the release in stated amounts to be set forth therein.

APPENDIX B
LIST OF PROJECT PARTICIPANTS

RICHARD P. KANDARE conducted the on site review of records curated by the Missouri Department of Natural Resources and authored various sections of the report. Mr. Kandare received an MA in anthropology from the University of Arkansas in 1983 and is a member of the Society of Professional Archeologists.

TIMOTHY C. KLINGER served as the Principal Investigator for the project and authored various sections of the report. Mr. Klinger received an MA in anthropology in 1977 from the University of Arkansas and a JD from the University of Arkansas School of Law in 1982. Mr. Klinger is a professional archeologist registered by the Society of Professional Archeologists and is an Attorney at Law licensed by the State of Arkansas.