

A Cultural Resources Management Plan  
for Residual Lands at the Union Electric Company  
Nuclear Power Plant  
Callaway County, Missouri

Prepared for  
Union Electric Company

By  
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#### ABSTRACT

A cultural resources management plan based on a Phase I cultural resources survey and assessment (Ray et al. 1983) on 5,848 acres of residual lands at the Union Electric Company Nuclear Power Plant, located in Callaway County, Missouri, is presented.

A total of 129 cultural resources sites was identified and evaluated during the Phase I survey and assessment: 79 prehistoric archaeological sites, 29 historic archaeological sites, and 21 architectural sites. Twenty-three prehistoric archaeological sites are recommended as potentially eligible for nomination to the National Register of Historic Places, and two historic sites are recommended as potentially eligible. None of the historic architectural resources is considered eligible for nomination to the National Register of Historic Places. The remaining prehistoric and historic archaeological sites are not considered eligible for nomination to the National Register of Historic Places; however, the sites will be protected from subplow zone disturbance by this management plan.

#### ACKNOWLEDGMENTS

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A CULTURAL RESOURCES MANAGEMENT PLAN  
FOR RESIDUAL LANDS AT THE UNION ELECTRIC COMPANY NUCLEAR POWER PLANT  
CALLAWAY COUNTY, MISSOURI

Introduction

This management plan and the Phase I cultural resources survey (Ray et al. 1984) upon which it is based represents Union Electric Company's compliance with the National Historic Preservation Act of 1966 (P.L. 89-665) and Executive Order 11593 (Protection and Enhancement of the Cultural Environment). Completion of the Phase I survey and accompanying management plan also provides documentation evidencing United States Nuclear Regulatory Commission compliance with the Advisory Council on Historic Preservation regulations, 36 CFR 800 (Protection of Historic and Cultural Properties), and other applicable federal and state regulations.

A Phase I cultural resources survey and assessment of approximately 5,848 acres (2,366 ha) was conducted on residual lands which surround the Union Electric Company Callaway Nuclear Power Plant located in central Missouri 12 mi east of Fulton, Missouri (Ray et al. 1984). The primary objective of the Phase I survey and assessment was to locate, evaluate, and identify potentially significant cultural resources; and the primary purpose of the management plan is to provide guidance for the preservation of potentially significant cultural resources. The Missouri Department of Conservation manages the residual lands under a lease agreement with the property owner, Union Electric Company. A management plan currently in effect (Missouri Department of Conservation 1976) recommends that the highest management priority is to maintain a diverse, high-quality natural environment which will provide recreational activities such as fishing, controlled hunting, nature

study, and other compatible activities the Company may wish to incorporate. The cultural resources management plan will supplement the existing land use management plan and will be used by the Company and the Missouri Department of Conservation as a planning tool. Implementation and coordination of this plan is the responsibility of Union Electric Company's Nuclear Engineering and Environmental Services departments.

Prior to the construction of the plant and related facilities, Union Electric Company met federal legislative and regulatory requirements by funding cultural resources surveys in direct impact zones. During the period 1975 through 1979, Evans (1975, 1979) and Evans and Ives (n.d., 1973, 1978, 1979a, 1979b) wrote seven assessment reports. Also, direct impact zones were surveyed in conjunction with this project (McNerney 1982; Tucker and Morin 1981a, 1981b). This management plan includes the results of all surveys done on plant property.

This cultural resources management plan consists of two parts. The first includes background information such as the legal authority for the study, previous cultural resources studies prepared for the plant and related construction activities, current land use, concepts and definitions of cultural resources management, summary of potentially significant cultural resources identified during the Phase I survey, and a discussion of direct and indirect adverse impacts. The second part of the report provides a discussion of the National Register nomination process and guidance for implementation of the management plan.

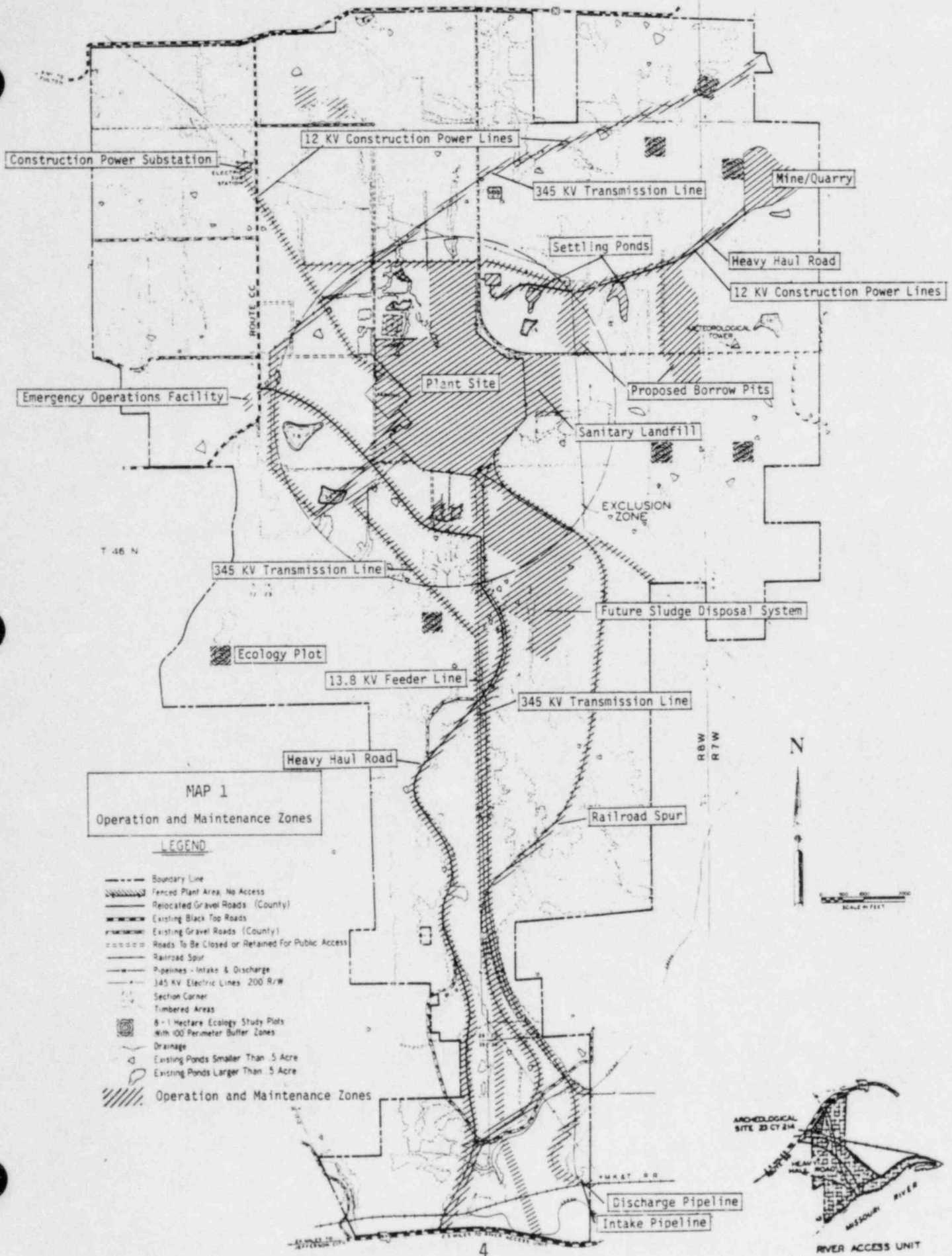
#### Current and Future Land Use

There are two general types of land use areas at the Callaway Nuclear Power Plant site, operation and maintenance areas and wildlife management areas (residual lands). Activities associated with each of

the two areas are different and thus require different cultural resources management approaches.

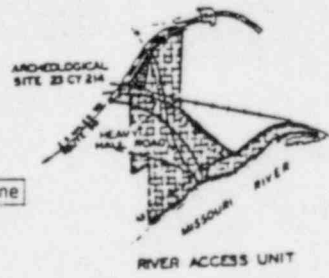
Operation and maintenance zones include electrical transmission lines, heavy haul road, settling ponds, railroad spur, quarry, waterlines (underground), emergency operations facility, meteorological tower, landfill area, borrow pits, and ecology plots (Map 1). Activities in these areas would include inspection, repair, maintenance, monitoring, and, in the case of the borrow pits, earthmoving. Cultural resources surveys and assessments have been completed and reviewed by the MSHPO at all of these operation and maintenance locations (Evans 1975, 1979; Evans and Ives n.d., 1973, 1978, 1979a, 1979b; McNerney 1982; Tucker and Morin 1981a, 1981b). These assessments were carried out ahead of construction and, with the exception of site 23 CY 20, did not impact significant cultural resources. Excavations were carried out to mitigate the impacts of railroad construction at site 23 CY 20 (Evans 1975; Evans and Ives 1979a). Therefore, with regard to future cultural resources management decisions within operation and maintenance zones, consideration must be given to the fact that (1) all areas have received survey and assessment, (2) all areas have been impacted by previous construction activity, and (3) all cultural resources sites which are within the operation and maintenance zones (23 CY 20, 23 CY 352, and 23 CY 359) will be protected by this management plan.

The residual lands at the Callaway Nuclear Power Plant site are being managed to enhance wildlife habitat and provide fishing, hunting, and outdoor recreational opportunities for any individual, group, or organization wishing to make use of these privileges. Land use patterns, either planned or existing, which support and facilitate this management plan include forest habitat (5,251 acres), fishing ponds (10 ponds over one-half acre), crop lands (2,480 acres crop and pasture), access roads, hiking and equestrian trails, parking lots, and picnicing



**MAP 1**  
**Operation and Maintenance Zones**

- LEGEND**
- Boundary Line
  - ▨ Fenced Plant Area, No Access
  - ▤ Relocated Gravel Roads (County)
  - ▥ Existing Black Top Roads
  - ▦ Existing Gravel Roads (County)
  - ▧ Roads To Be Closed or Retained For Public Access
  - ▨ Railroad Spur
  - ▩ Pipelines - Intake & Discharge
  - 345 KV Electric Lines 200 R/W
  - Section Corner
  - ▬ Timbered Areas
  - ▭ 8 - 1 Hectare Ecology Study Plots With 100 Perimeter Buffer Zones
  - ▮ Drainage
  - ▯ Existing Ponds Smaller Than .5 Acre
  - ▰ Existing Ponds Larger Than .5 Acre
  - ▱ Operation and Maintenance Zones





areas. A visitor's interpretive center also has been proposed (Missouri Department of Conservation 1976). Potentially significant cultural resources within wildlife management and agricultural zones will be protected by this management plan.

#### Cultural Resources Management

Cultural resources constitute a fragile, limited, nonrenewable portion of the total environment. Because they are the physical legacy of various stages of past human lifeways, they are illustrative of man's cultural development. Cultural resources include prehistoric and historic archaeological resources and historic architectural resources. These resources are represented by sites, buildings, districts, and objects (Executive Order Counseling Notes Revised 8/1/74).

Cultural resources management is tied inextricably to a body of federal legislation. The Antiquities Act was passed in 1906 in recognition that cultural resources (archaeological sites only at that time) required protection from destruction. The Historic Sites Act of 1935 provided for the preservation of historic American sites, buildings, objects, and antiquities of national significance. More recently, the passage of the National Historic Preservation Act (1966), the National Environmental Policy Act (1969), the Archaeological and Historic Preservation Act (1974), and the Archaeological Resources Act (1979) have expanded greatly the role of the federal government in the area of cultural resources management. Central to this legislation and cultural resources management are the concepts of preservation either through data recovery prior to destruction or protection through avoidance.

Assessing the nature of cultural resources requires special techniques and methods, which may be thought of as "cultural resource management" (King et al. 1977:8). These authors describe the many dimensions of cultural resources management in an entire volume. While

many nonspecialists are required to evaluate reports and to make decisions about cultural resources, these persons often do not have the time nor the inclination to review the growing body of literature on the subject. For the present purposes, a brief review of the idea in the form of a working definition will be useful.

Cultural resources management seeks to have control (in action and use) and to have responsibility for sites, structures, objects, and districts which are historically, architecturally, archaeologically, or culturally significant. Implementation of such control or responsibility may include inventory, assessment, recovery, research, protection, preservation, and enhancement, depending upon individual resources and circumstances (McNerney 1978:93).

This definition emphasizes the control of and responsibility for cultural resources, a situation with which many landowning agencies and corporations find themselves confronted today. The primary practitioners of the discipline are anthropologists and archaeologists (requiring a variety of supporting specialists in the physical and natural sciences), historians, and architectural historians. Other disciplines rapidly becoming involved administratively in cultural resources management include land managers, planners, environmental planners, engineers, ecologists, real estate developers, and recreation managers. At the present time, the agencies which will be primarily involved in the management of cultural resources on the residual lands will be Union Electric Company, Missouri Department of Conservation, and the Missouri Office of Historic Preservation. Using the above definition, the management process may be briefly outlined.

The first step of the management process involves inventory and assessment: the review of previously recorded resources, the location and inventory of unrecorded resources on the landscape, the assessment of the significance of the resources, and the assessment of potential adverse impacts which may threaten the resources. These are the major considerations ordinarily addressed in a Phase I survey and assessment. A central issue during this phase and throughout the management process

is the determination of significance. The evaluation of significance includes the collection and analysis of artifacts from archaeological sites, shovel tests or soil probings to determine the vertical and horizontal limits of the site, and the evaluation of architectural sites for historic significance.

Next, a conclusion regarding the significance of the site is offered by the investigator. This conclusion is based on the evaluation of the results of the survey and the National Register of Historic Places criteria for significance. The National Register is an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment. The National Register was designed to be and is administered as a planning tool. The criteria are:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- (1) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (2) That are associated with the lives of persons significant in our past; or
- (3) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (4) That have yielded, or may be likely to yield, information important in prehistory or history (Federal Register 1976:1595).

The investigator's conclusion regarding the eligibility of a particular property for nomination to the National Register is reviewed by the State Historic Preservation Officer in consultation with the agencies involved. The State Historic Preservation Officer (SHPO) is a state official appointed by the governor whose job it is to insure that the cultural resources of the state are not destroyed arbitrarily and to

make recommendations to protect such resources. It is the SHPO who helps make certain that the legal responsibilities specified in the National Historic Preservation Act of 1966 are fulfilled. If the SHPO and the concerned agencies agree that the properties do not meet any of the criteria for listing in the National Register, the matter goes no further and the properties may be altered. If the agencies and the SHPO agree that the properties are eligible, or if they cannot agree, or if some question exists regarding the eligibility of the nominated properties, final determination of eligibility rests with the Office of Archaeology and Historic Preservation, a multicomponent office within the National Park Service, the core unit of which is the National Register of Historic Places (King et al. 1977:88). If the properties do not meet any of the criteria, no further action is required. If the property is determined eligible, then appropriate preservation measures are developed by the responsible agencies.

Following the identification and assessment phase of the cultural resources management process, land use limitations are offered which are designed to protect and preserve the resource. As indicated earlier, cultural resources are fragile, limited, nonrenewable portions of the natural and cultural environment; any direct land altering activities (i.e., roads, reservoirs) or indirect impacts (i.e., increased public use of an area containing sites) may threaten the preservation of the site. These potential impacts or adverse effects are evaluated, and appropriate mitigative alternatives are offered. Mitigation may include avoidance, data recovery through excavation, or other means of preservation.

The foregoing provides a brief outline of the cultural resources management process including: a definition of cultural resources, a summary definition of cultural resources management, a discussion of significance, and key concepts of cultural resources management. These

concepts will serve as a framework within which to develop a cultural resources management plan for the residual lands.

#### Summary of Cultural Resources

A total of 129 sites (Map 2, Table 1) was identified and evaluated during the Phase I survey and assessment: 79 prehistoric archaeological sites, 29 historic archaeological sites, and 21 architectural sites. For more specific information regarding individual sites and related research information, the reader is referred to the cultural resources report (Ray et al. 1984).

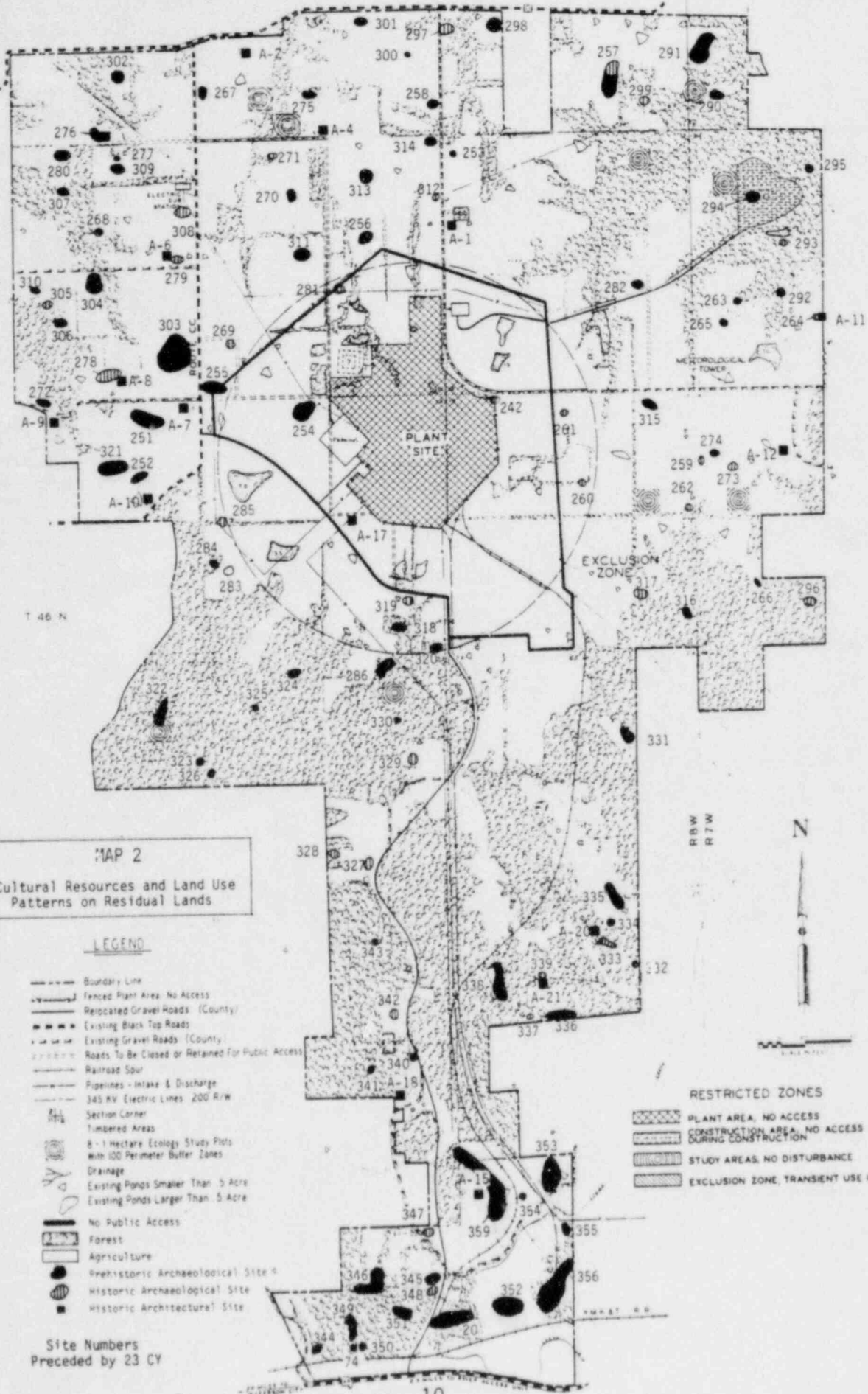
#### Prehistoric Resources

Of the 79 prehistoric sites, cultural affiliation could not be determined for 62 sites (78.5%) due to the absence of culturally diagnostic artifacts. Forty-two (53.2%) of the sites recorded produced 10 waste flakes or less. Cultural affiliation was established for 17 (21.5%) sites.

The more intensively occupied sites which exhibit a more diversified range of prehistoric activities occupy the ridge tops and lower terraces where the dissected uplands meet the Missouri River floodplain. In this zone, site types range from burial mounds (23 CY 74) to possible villages (23 CY 356).

Less intensive prehistoric occupations utilized the upland forest zone and the prairie zone in the northern half of the project area. Sites in the prairie and prairie forest edge, currently in agricultural production, are characterized by widely and sparsely distributed scatters of waste chert flakes. Occasionally, clusters of flakes and tool fragments mark a location where more time was spent manufacturing or maintaining stone tools.

The most common artifacts recovered at all sites were chipped stone tools and the waste flakes from their manufacture. This is true on many



MAP 2  
Cultural Resources and Land Use  
Patterns on Residual Lands

LEGEND

- Boundary Line
- Fenced Plant Area, No Access
- Relocated Gravel Roads (County)
- Existing Black Top Roads
- Existing Gravel Roads (County)
- Roads To Be Closed or Retained For Public Access
- Railroad Spur
- Pipelines - Intake & Discharge
- 345 KV Electric Lines, 200 R/W
- Section Corner
- Timbered Areas
- 8 - 1 Hectare Ecology Study Plots with 100 Perimeter Buffer Zones
- Drainage
- Existing Ponds Smaller Than .5 Acre
- Existing Ponds Larger Than .5 Acre
- No Public Access
- Forest
- Agriculture
- Prehistoric Archaeological Site
- Historic Archaeological Site
- Historic Architectural Site

- RESTRICTED ZONES
- ▨ PLANT AREA, NO ACCESS
  - ▨ CONSTRUCTION AREA, NO ACCESS DURING CONSTRUCTION
  - ▨ STUDY AREAS, NO DISTURBANCE
  - ▨ EXCLUSION ZONE, TRANSIENT USE ONLY

Site Numbers  
Preceded by 23 CY

Table 1

Prehistoric and Historic Archaeological Sites Located on Residual Lands  
Union Electric Company, Callaway Nuclear Power Plant Site

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
LEVEL UPLAND PRAIRIE (n=41)								
242*	13	-	Prehistoric	/Knapping	Agri Exclusion zone	Weeds	Subplow zone disturbance	Not eligible
251	15	39.0	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
252*	15	8.0	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
253*	12	.15	Prehistoric	/Knapping	Agri	Weeds	Subplow zone disturbance	Not eligible
254	14	19.5	Prehistoric	Camp /Knapping	Agri	Cultivated Crop stubble	Subplow zone disturbance	Not eligible
255	11	12.1	Prehistoric	Camp /Knapping	Agri	Cultivated Crop stubble	Subplow zone disturbance	Not eligible
256*	11	5.9	Middle-Late Archaic	Camp /Knapping	Agri	Cultivated Crop stubble	Subplow zone disturbance	Not eligible
257	1	14.8	Prehistoric/ Historic	H/Camp /Knapping Fabricating Processing	Agri	Cultivated Crop stubble	Limited Agri	Eligible
258*	2	1.0	Prehistoric	/Knapping	Agri	Cultivated Crop stubble	Subplow zone disturbance	Not eligible
259	18	.1	Historic	Cemetery/Burial	Cemetery	Weeds, brush	Avoid	Not eligible

Legend: Sec - Section Number  
N - Nonhabitation Type (outbuildings)  
D - Discard (dump)

U - Unable to Evaluate  
H - Habitation  
\* - Site with fewer than 10 Artifacts

+Limited Agriculture-see page 38  
Avoid-see page 39

\*\*Noneligible designations are based on the results of the Phase I survey. There is the remote possibility that these sites may be eligible and are protected by the recommendations in this management plan.

Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
260*	13	-	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
261	13	1	Historic	H	Nonagri	Forest, brush	Avoid	Eligible
267	2	8.2	Paleo	Camp /Knapping	Agri	Crop stubble	Limited agri fall plow for surface collection	Eligible
269	11	.5	Historic	H	Nonagri	Forest, brush	Subplow zone disturbance	Not eligible
270	11	17.25	Prehistoric	Camp /Knapping	Agri	Cultivated Crop stubble	Subplow zone disturbance	Not eligible
271	11	1	Historic	H	Nonagri	Forest, brush	Subplow zone disturbance	Not eligible
273	18	1	Historic	H	Nonagri	Forest	Subplow zone disturbance	Not eligible
274*	18	2.4	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
275*	2	2.5	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
276	3	2.5	Historic	H, N	Nonagri	Forest	Subplow zone disturbance	Not eligible
277	10	.9	Historic	Holland Cemetery/Burial	Cemetery	Brush	Avoid	Not eligible
278	10	1	Historic	H	Agri	Grass	Subplow zone disturbance	Not eligible
279	10	1	Historic	H	Nonagri	Weeds, brush	Subplow zone disturbance	Not eligible
281*	11	.1	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
285	14	1	Historic	H	Agri	Grass	Subplow zone disturbance	Not eligible
297	1	.3	Historic	U	Nonagri	Forest	Subplow zone disturbance	Not eligible



Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations†	NRHP Potential**
298	1	3.4	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
300	2	1	Historic	H	Agri	Crop stubble	Subplow zone disturbance	Not eligible
301*	2	.6	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
302	3	.5	Prehistoric	Camp /Knapping	Agri	Cultivated	Subplow zone disturbance	Not eligible
303	10	14.8	Early Archaic	Camp /Knapping Food processing	Agri	Crop stubble	Limited Agri	Eligible
308*	10	10.25	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
309	10	13.6	Late Archaic	Camp /Knapping Hunting, butchering	Agri	Crop stubble	Limited Agri	Eligible
311	11	23.9	Prehistoric	Camp /Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
312	11	1	Historic	H	Nonagri	Forest	Subplow zone disturbance	Not eligible
313	11	62	Prehistoric	Camp /Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
314	11	.25	Prehistoric	Camp /Knapping (feature)	Agri	Crop stubble	Limited Agri	Eligible
315*	13	.7	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
319	14	1	Historic	H	Agri	Crop stubble	Subplow zone disturbance	Not eligible
321	15	10.5	Prehistoric	Camp /Knapping Food processing	Agri	Crop stubble	Limited Agri	Eligible

Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
PRAIRIE/FOREST EDGE (n=34)								
262	13	1	Historic	D	Agri	Grass	Subplow zone disturbance	Not eligible
263	7	1.4	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
264*	7	2.8	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
265	7	1.3	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
266*	18	.1	Prehistoric	/Knapping	Agri	Cultivated	Subplow zone disturbance	Not eligible
268	10	1.7	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
272*	15	.75	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
280*	10	.1	Prehistoric	/Knapping	Nonagri	Brush	Subplow zone disturbance	Not eligible
282	12	1.5	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
283	14	.5	Historic	Law Cemetery/Burial	Cemetery	Forest, grass	Avoid	Not eligible
284*	14	.3	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
286	23	8	Prehistoric	/Knapping	Nonagri	Brush Crop stubble	Subplow zone disturbance	Not eligible
290*	6	.75	Prehistoric	/Knapping	Nonagri	Brush	Subplow zone disturbance	Not eligible
291	6	6	Prehistoric	Camp /Knapping Fabricating Processing	Agri	Crop stubble	Limited Agri	Eligible

Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
292*	7	1	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
293*	7	.11	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
294*	7	12.4	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
295*	7	.15	Prehistoric	/Chert procurement Knapping	Nonagri	Nothing	Subplow zone disturbance	Not eligible
299	1	.1	Historic	U	Nonagri	Forest	Subplow zone disturbance	Not eligible
304	10	3.2	Late Woodland/ Mississippian	Camp /Knapping Hunting Food processing Fabricating	Agri	Crop stubble	Limited agri	Eligible
305	10	.25	Historic	U	Nonagri	Forest, brush	Subplow zone disturbance	Not eligible
306*	10	1.5	Prehistoric	/Knapping	Nonagri	Brush, grass	Subplow zone disturbance	Not eligible
307*	10	1.2	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
310*	10	.3	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
316*	13	.1	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
317	13	.25	Historic	U	Agri	Grass	Subplow zone disturbance	Not eligible
318*	14	5.6	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible
320*	14	1.5	Prehistoric	/Knapping	Agri	Crop stubble	Subplow zone disturbance	Not eligible

Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
324*	23	.05	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
325*	23	.05	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
327	23	.2	Historic	H	Nonagri	Brush	Subplow zone disturbance	Not eligible
328	23	1	Late Archaic/ Early Woodland	Camp /Knapping (biface manufacture) Cutting, butchering	Agri	Crop stubble	Limited Agri	Eligible
329	23	.5	Historic	H	Agri	Grass	Maintain present use	Not eligible
330*	23	.2	Prehistoric	/Knapping	Nonagri	Brush	Maintain present use	Not eligible
DISSECTED UPLAND OAK-HICKORY FOREST (n=17)								
296	18	.25	Historic	H	Nonagri	Forest	Subplow zone disturbance	Not eligible
322	22	4.5	Late Woodland/ Mississippian	Camp /Knapping Hunting	Nonagri	Weeds	Limited Agri	Eligible
323*	22	.15	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
326*	23	.5	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
331*	24	.3	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
332*	25	.1	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
333	25	2	Historic	H	Nonagri	Forest, grass	Subplow zone disturbance	Not eligible

Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
334	25	1.1	Prehistoric	Chert source /Chert procurement Knapping	Nonagri	Forest	Avoid	Eligible
335	24/25	18.5	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
336	25	5.75	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
337	25	-	Historic	/Rock pile	Nonagri	Forest	Subplow zone disturbance	Not eligible
338*	25	2.4	Prehistoric	/Knapping	Agri	Grass	Subplow zone disturbance	Not eligible
339	25	.25	Historic	H	Nonagri	Forest	Avoid	Eligible
340*	26	.1	Prehistoric	/Knapping	Nonagri	Grass	Subplow zone disturbance	Not eligible
341*	26	.1	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
342	26	.1	Historic	H	Nonagri	Weeds	Subplow zone disturbance	Not eligible
343*	26	.1	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
DISSECTED UPLAND/BOTTOMLAND FOREST EDGE (n=16)								
20	35	7.4	Middle? Late Woodland	/Knapping	Nonagri	Weeds	Avoid	Eligible
74	35	.1	Middle? Late Woodland	Mound/Burial?	Nonagri	Forest	Avoid	Eligible
214	31	.1	Prehistoric	/Knapping	Nonagri	Forest	Subplow zone disturbance	Not eligible
344*	35	1	Prehistoric	/Knapping	Nonagri	Brush	Subplow zone disturbance	Not eligible

Table 1 (cont.)

Site No 23CV-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations+	NRHP Potential**
345	35	1.25	Middle Archaic?	Camp /Knapping Drilling	Agri	Grass	Limited Agri	Eligible
346	35	10	Dalton	Camp /Knapping Hunting, butchering	Agri	Grass	Limited Agri	Eligible
347	35	1	Historic	H	Nonagri	Brush	Subplow zone disturbance	Not eligible
348	35	.61	Historic	H	Agri	Grass	Subplow zone disturbance	Not eligible
349	35	2.5	Prehistoric	Camp /Knapping Food processing	Nonagri	Forest, brush	Avoid	Eligible
350	35	.1	Late Woodland	Mound/Burial	Nonagri	Forest	Avoid	Eligible
351	35	5	Prehistoric	Camp /Knapping Food processing	Agri	Grass	Limited Agri	Eligible
352	36	6.2	Late Woodland	/Knapping Food processing Hematite processing Pottery making Groundstone manufacture	Agri	Crop stubble	Limited Agri	Eligible
353	36	8.4	Middle-Late Archaic Late Woodland	Camp /Knapping Food processing	Agri	Crop stubble	Limited Agri	Eligible
354	36	.25	Prehistoric	Camp /Knapping	Nonagri	Brush	Subplow zone disturbance	Not eligible
355*	36	1.6	Prehistoric	/Knapping	Agri	Cultivated	Subplow zone disturbance	Not eligible

Table 1 (cont.)

Site No 23CY-	Sec	Approx Size (Acres)	Cultural Affiliation	Site Type/Activity	Present Land Use	Ground Cover	Land Use Limitations <sup>+</sup>	NRHP Potential**
356	36	11	Middle-Late Archaic Late Woodland	Mound/Knapping Camp Food processing Burial Hunting Drilling	Agri	Weeds	Limited agri	Eligible
359	25/26/36	30	Early Archaic Lte Archaic Middle? and Late Woodland	Camp /Knapping Cemetery Food processing Hunting	Cemetery	Grass, forest	Avoid Limited Agri	Eligible

prehistoric archaeological sites, but it is especially common in the study area where quality chert resources are plentiful.

#### Historic Resources

Twenty-nine historic components were recorded in the study area. Of these, 19 are determined to be habitation sites based on foundation remains and artifact scatters consisting of ceramics, building materials, and other domestic artifacts. The remaining 10 sites consist of 1 nonhabitation site (outbuilding), 1 dump area, 3 cemeteries, and 4 sites which were unable to be evaluated due to an insufficient amount of artifactual material and historical documentation. Sixteen of the 29 historic components are located within nonagricultural areas.

Safety regulations required early demolition and bulldozing at 15 sites. This activity has effected the archaeological integrity at sites 23 CY 269, -271, -278, -279, -285, -297, -300, -319, -327, -329, -347, -348, -273, -276, -342.

Historical documentation and archaeological evidence indicate that the historic occupation period for 19 of 29 sites ranged from 1840 to 1975 with the majority of them, 14 (74%), clustering between 1870 to 1900. Ten sites were not assigned to a chronological period due to an insufficient amount of archaeological material and historical documentation.

#### Architectural Resources

Twenty-one architectural sites were recorded within the project area. They vary from sites with a single structure or ruin to farmsteads with a house and several outbuildings and associated structures. Only one site (21) dates exclusively to the nineteenth century, while the rest exhibit construction sequences spanning the nineteenth and twentieth centuries or are restricted exclusively to the twentieth century.



Of the 71 structures associated with these sites, 10 are houses or foundations, 59 are outbuildings or related structures, 1 is a bridge, and 1 is a telephone substation. Barns and sheds are the most common structures (14 each), while animal shelters number among the least common. Overall, the configuration of existing structures and ruins is typical of rural Missouri and the rural Midwest.

### Evaluation of Site Significance

#### Prehistoric Sites

Conclusions regarding site significance are a major objective of all cultural resources surveys and assessments. The National Register of Historic Places (NRHP) criteria for significance was applied to each of the sites recorded and has been presented previously (pg. 7). Those sites which appear to be potentially eligible for nomination to the NRHP are summarized in the following section. For site specific information or additional background information, the reader is referred to the Phase I report (Ray et al. 1984). While the NRHP criteria are useful for many historic and historic architectural sites (e.g., a president's birthplace or a battlefield), they often are too general to establish clearly the potential significance of a prehistoric archaeological site or to justify Phase II investigations at these sites (cf. Comptroller General 1981:23-32). The Comptroller General's report notes that "it is impractical for [the Department of the] Interior to design all-encompassing criteria by which archaeological sites can be centrally evaluated for state and local significance" (1981:25-26). Thus, significance is established through a process of recommendations to the SHPO by recognized professional archaeologists which are then subject to review and evaluation by the SHPO. In order to initiate and facilitate this process, eight working criteria were employed by American Resources Group, Ltd., to evaluate potential NRHP eligibility of each of the prehistoric archaeological sites recorded on the residual lands. For

the purposes of this evaluation, a site was considered potentially eligible for the National Register of Historic Places if it exhibited one or more of the following attributes:

1. site appeared to offer the potential to answer specific local or regional research problems.
2. site exhibited culturally diagnostic artifacts suggesting successive occupations through time, but artifact densities were light.
3. organic staining was present, suggesting an intensive occupation, but the site did not produce culturally diagnostic artifacts.
4. site occupied a unique or poorly understood microenvironmental zone.
5. site represented a cultural period which has received little research attention.
6. artifact densities were medium to heavy, suggesting an intensive occupation, but no culturally diagnostic artifacts were recovered.
7. evidence suggested that the site may represent a poorly understood segment of a particular settlement system.
8. site contained cultural material (animal bone) or artifacts (metate) which suggested it may contain specific subsistence data.

These eight working criteria are supplemental to the National Register criteria. Specifically, the eight criteria are linked to the National Register criteria which relate to archaeological sites: "(d) that have yielded, or may be likely to yield, information important in prehistory or history" (Federal Register 1976:1595). These provide the field investigator and the reviewer with specific guidelines with which to evaluate archaeological resources, justify recommendations of

additional research or no further research, and to make statements of significance and recommendations of potential National Register eligibility.

The rationale for considering a prehistoric site nonsignificant and thus potentially noneligible for nomination to the National Register of Historic Places is based on the following interrelated factors:

1. Site failed to meet any of the eight criteria.

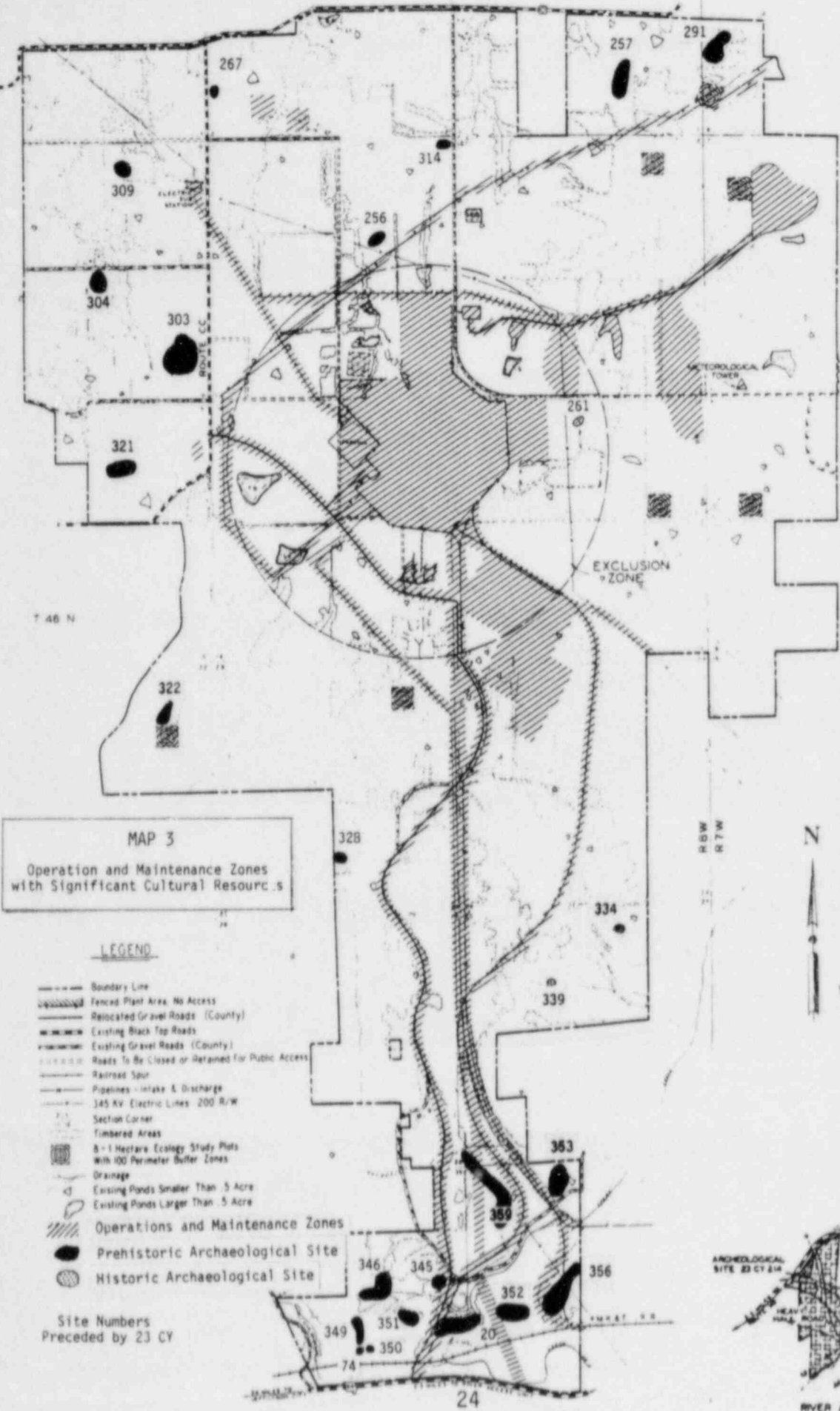
2. Site produced very few artifacts suggesting a highly transient occupation. Of the 41 prehistoric sites considered potentially nonsignificant, 27 produced 5 or fewer waste flakes (35%), and 14 produced 10 waste flakes or fewer (18%) and no other evidence of prehistoric occupation. Small sites producing nothing more than a few waste flakes and lacking culturally diagnostic artifacts offer little research potential or new data beyond site location information. Further, such sites are numerous in areas of abundant chert resources such as the project area.

3. Items 1 and 2 above, combined with the fact that the 23 prehistoric sites considered potentially significant constitute a sample of the known cultural and environmental diversity represented in the project area, provide the basis for recommendations of nonsignificance.

Architectural sites were evaluated and considered significant or nonsignificant using the criteria of the National Register of Historic Places.

Historic archaeological sites were considered nonsignificant based on the criteria of the National Register of Historic Places, integrity, temporal considerations, and the availability of published sources of historic documentation other than the archaeological record.

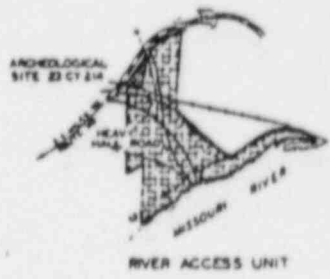
Evaluating all sites using these criteria and NRHP criteria, 23 sites are considered individually significant and potentially eligible for nomination to the National Register of Historic Places (Map 3). A



**MAP 3**  
 Operation and Maintenance Zones  
 with Significant Cultural Resources

- LEGEND**
- Boundary Line
  - ▨ Fenced Plant Area, No Access
  - Relocated Gravel Road (County)
  - Existing Black Top Roads
  - Existing Gravel Roads (County)
  - Roads To Be Closed or Retained for Public Access
  - Railroad Spur
  - Pipelines - Intake & Discharge
  - 145 KV Electric Lines - 200 R/W
  - Section Corner
  - ▨ Timbered Areas
  - ▨ 8-1 Hectare Ecology Study Plots With 100 Perimeter Buffer Zones
  - Drainage
  - Existing Ponds Smaller Than .5 Acre
  - Existing Ponds Larger Than .5 Acre
  - ▨ Operations and Maintenance Zones
  - Prehistoric Archaeological Site
  - Historic Archaeological Site

Site Numbers  
 Preceded by 23 CY



brief summary of each site is provided below. For more detailed discussions of these sites potentially eligible for nomination to the NRHP, the reader is referred to the Phase I cultural resources survey and assessment report (Ray et al. 1984).

#### 23 CY 20

The site is a village or residential base camp and may be associated with either or both the large earthen mound (23 CY 74) and low rock mound (23 CY 350) located on top of the adjacent ridge system or the mound group (23 CY 356) on the opposite ridge 700 m to the east. Similar pottery sherds suggest 23 CY 20 is at least contemporaneous, if not affiliated with, 23 CY 352, another village site located on a similar terrace 500 m east of the site.

An analysis of the chert sample from 23 CY 20 indicates an unexpected selection for locally occurring Burlington chert, probably procured entirely from stream deposited sources, and supplemented by Jefferson City chert, another locally occurring chert. The preference for Burlington chert may be due to its susceptibility and responsiveness to heat treatment. Over 50% of the Burlington artifacts at the site had been heat altered.

Based on reported materials from the site, Evans and Ives (1973:10) suggested the site is a multicomponent occupation, spanning 10,000 years including a Middle Woodland component. However, the pottery recovered from the site, a Scallorn arrow point, and other possible Woodland artifacts (Evans and Ives 1979a:19) indicate that the major occupation was probably Late Woodland (1500-1000 B.P.). The site's topographic setting indicates a high potential for buried cultural horizons (Map 2).

#### 23 CY 74

The site is apparently a burial mound and is probably representative of the Boone Phase in central Missouri. The setting high on a bluff overlooking the Missouri River Valley is consistent with the

location of Boone Phase mounds (Denny 1964:137), and the mounds are sometimes constructed entirely of earth (Chapman 1980:112). This probable mortuary site may be associated with the village site (23 CY 20) located on a terrace 600 m to the east. The Boone Phase is largely confined within the Lower Missouri Valley Locality II (Chapman 1980:121; Denny 1964:154), and it is firmly affiliated with the Late Woodland period (Chapman 1980:112; Denny 1964:158) which ranges from 1500-1000 B.P.

23 CY 256

The site is a small field camp and knapping station. The Big Sandy Notched points suggests a date range from 7000-5000 B.P. (Chapman 1975:242). Thus, the site is affiliated with the Middle Archaic period.

23 CY 257

The site is a field camp and knapping station with little evidence of long-term habitation. The high percentage (84.6%) of flakes greater than 2 cm<sup>2</sup> suggests an initial lithic reduction station, and the almost exclusive use of Burlington chert indicates procurement of nearby chert resources. The tool types suggest fabricating and processing activities.

Site 23 CY 257 was revisited in May of 1982. A surface inspection of the main portion of the site revealed a moderate scatter of predominantly large secondary decortication flakes concentrated at the head of a ravine. Also located were three large bifaces, one large preform, one mano, and a probable platform preparation abrader; only the preform and the platform preparation abrader were collected. It was noted that many of the secondary decortication flakes and one of the large bifaces were knapped from stream deposited chert. The high percentage of secondary decortication flakes, the relatively high number of bifaces (6 total) for a small field camp, the preform, and the platform preparation abrader all suggest the site was used primarily for

Initial reduction and biface manufacture. The fact that the majority of artifacts with cortex surfaces was knapped from stream deposited nodules suggests that most of the chert probably was procured from the nearby ravine and transported to the top of the ridge for reduction. The large preform, which was not heat treated, exhibits several attributes that are suggestive of an Etley Stemmed projectile point/knife (Chapman 1975:246) including the large form (14 cm in length), blade shape, and the preliminary shaping of the hafting element. Because of this Etley-like projectile point/knife, a Late Archaic affiliation has been assigned to the site. The probable platform preparation (or antler flaker abrader) is a sandstone slab, 12 x 18 cm, and exhibits two parallel, slightly sinuous grooves on one surface.

23 CY 267

The site is a small field camp and knapping station with no evidence of substantial habitation. Analysis of the chert sample from 23 CY 267 indicates an almost exclusive use of local Burlington chert, mostly procured from stream deposits; however, the two Jefferson City flakes indicate transportation of that chert from at least 1.5 km distant. A fluted Clovis projectile point indicates a Paleo-Indian occupation ca. 12,000 B.P.

23 CY 291

The site is a small field camp with three discrete knapping stations. The relatively high percentage (63.4%) of flakes greater than 2 cm<sup>2</sup> indicates initial reduction lithic workshops. The artifactual data also indicate an almost exclusive use of local Burlington chert, procured from both stream deposited and residual sources; however, the Jefferson City flake indicates transportation of that chert from approximately 1.8 km distant. The tool types suggest fabricating and processing activities. Cultural affiliation is unknown.

#### 23 CY 303

The site is a small field camp and knapping station. The projectile point base and serrated biface midsection suggest activities related to hunting and butchering, and the pitted/hammer/grinding stone indicates plant processing activities. The Rice Lanceolate component suggested by the point base and serrated midsection is affiliated with the Early Archaic period (9000-7000 B.P.) and possibly continues into the Middle Archaic (Chapman 1975:253).

#### 23 CY 304

The site appears to be a seasonal field camp and knapping station. The high percentage (69.7%) of flakes greater than 2 cm<sup>2</sup> indicates initial lithic reduction; two secondary decortication flakes actually had diameters of 16 cm. Other activities suggested by the tool types include hunting and butchering, fabricating and processing, and plant food preparation.

Analysis of the chert sample from 23 CY 304 indicates a predominant utilization of Burlington chert, mostly procured from the nearby creek bed. A small triangular arrow point recovered at the site is affiliated with the Late Woodland/Mississippi period which ranges from 1200-500 B.P. in the study area.

#### 23 CY 309

The site appears to represent a seasonal or reoccupied field camp and knapping station. Analysis of the chert sample from 23 CY 309 indicates a predominant use of local Burlington chert, mostly procured from stream deposited sources. Activities other than flint knapping suggested by the tool types include hunting and butchering.

The Etley Stemmed projectile point/knife is affiliated with the Late Archaic period (5000-3000 B.P.) and is a diagnostic artifact of the Booth assemblage and Culvre River ceremonial complex in northeast Missouri (Chapman 1975:246).



23 CY 314

The site is probably a small field camp and knapping station with one and possibly two features visible on the surface. The feature(s) may be a simple fire hearth(s) or possibly chert heat treatment pit(s). The heat-altered chert was exclusively Burlington chert probably procured from the nearby creek. Cultural affiliation is unknown.

23 CY 321

The site is a small field camp and knapping station with evidence of plant food processing activities. Based on available data, chert procurement was predominantly from the closer Burlington sources. However, one-third of the artifacts were made from Jefferson City chert located at least twice as far away. Cultural affiliation is unknown.

23 CY 322

The site is a small field camp and knapping station with no evidence of substantial habitation. The relatively high percentage of secondary decortication flakes and flakes in general with dimensions greater than 2 cm<sup>2</sup> (61.3%) indicates initial lithic reduction. A triangular arrow point suggests the site was also used as a hunting camp during the Late Woodland/Mississippian periods ca. 1200-500 B.P.

Analysis of the limited chert sample from 23 CY 322 indicates a preference for Burlington chert. Both stream deposited and residual chert sources were utilized.

23 CY 328

The site is a small field camp and knapping station lacking evidence of permanent habitation. The artifactual evidence indicates bifacial tool manufacturing, probably for cutting and butchering purposes. A corner-notched, hafted tool is probably affiliated with the Late Archaic/Early Woodland transition period, which ranges from 4000-2500 B.P. in the study area.

23 CY 334

The site is a chert procurement and primary reduction knapping station with no evidence of habitation. The presence of 53 cores, the near absence of worked/utilized artifacts, the fact that 67.5% of the flakes recovered were decortication flakes, and that 85.9% were greater than 2 cm<sup>2</sup> are all consistent with what would be expected at an initial reduction lithic workshop. Quarrying was unnecessary at the site since the residual chert readily outcrops on the southwest exposure of the ridge. Thermal pretreatment was also unnecessary due to the inherent fine-grained nature of the chert. The artifactual evidence supports a nearly exclusive use of this residual Jefferson City chert source. Cultural affiliation is unknown.

23 CY 345

The site is a small field camp and knapping station. The hafted drill indicates activities such as stone, bone, and/or wood boring, and the chert analysis indicates a heavy reliance on Burlington and, thus, stream deposited chert resources. Suggested cultural affiliation for the site based on the hafted drill is Middle Archaic (7000-5000 B.P.).

23 CY 346

The site is probably a seasonal camp and knapping station. A chert analysis of the artifacts from 23 CY 346 indicates a selection for and predominant utilization of Burlington chert, probably procured entirely from stream deposited sources, over readily available residual/redeposited Jefferson City chert. The fact that 74% of the flakes collected were less than 2 cm<sup>2</sup> suggests primary reduction at the chert sources (creek beds) and tertiary reduction or finishing/resharpening on the site. Activities other than flint knapping suggested by tool types include hunting and butchering. The three Callaway chert flakes, all found in one shovel test, indicate some use, although minimal, of this scarce chert known to occur 6.5 km away.

A Dalton point recovered at the site represents the transitional period between Paleo-Indian and Archaic times or Late Paleo/Early Archaic period, ca. 10,600-9000 B.P. (Chapman 1975:96; Goodyear 1982). Dalton points have been found in situ in the earliest levels of nearby Arnold Research Cave and Graham Cave (Chapman 1975:245).

23 CY 349

The site is probably a reoccupied camp and knapping station with evidence of plant processing activities. The analysis of the chert sample from 23 CY 349 indicates a heavy reliance on or preference for Burlington chert, probably procured from local redeposited sources, over readily available residual or stream deposited Jefferson City chert. This small habitation site may be associated or affiliated with 23 CY 74, a Middle or Late Woodland mound located at the southern end of the site.

23 CY 350

This small rock feature is probably a mortuary mound site and may represent a Boone Phase mound. A few waste flakes suggests that flint knapping also was carried on in the site vicinity. The setting high on a bluff overlooking the Missouri River Valley is consistent with the location of Boone Phase mounds (Denny 1964:137), and burials do sometimes occur under stone cairns (Denny 1964:141). The Boone Phase is largely confined within the lower Missouri Valley Locality II (Chapman 1980:112; Denny 1964:154), and it is firmly affiliated with the Late Woodland period (Chapman 1980:112; Denny 1964:158).

23 CY 351

The site is probably a seasonal camp and knapping station with evidence of plant processing activities. There is also some evidence of a possible hearth on the site. Analysis of the chert artifacts from 23 CY 351 indicates a predominant use of and preference for Burlington chert, probably procured entirely from redeposited sources, over readily

available residual or stream deposited Jefferson City chert. Most of the limited amount of Jefferson City chert that was used probably came from residual sources. One-fourth of the Burlington artifacts were thermally altered, whereas only two flakes knapped from Jefferson City chert had been heat treated. The fact that three-quarters of the flakes were less than 2 cm<sup>2</sup> suggests primary reduction at the chert sources and tertiary reduction or finishing/resharpening on the site. Cultural affiliation is unknown.

#### 23 CY 352

The site is a village or residential base camp and is probably associated with the mound group (23 CY 356) atop the adjacent ridge. Similar pottery sherds suggest 23 CY 352 is at least contemporaneous if not affiliated with 23 CY 20, another village site located on a similar terrace 500 m to the west. Activities suggested by the tool types and debitage include secondary, but predominantly tertiary, flint knapping and tool maintenance, the manufacture of groundstone tools, butchering, drilling, hematite processing, plant food processing, and pottery making and food preparation/storage.

As evidenced by the sand, grit, and dolomite tempered pottery, the major component at 23 CY 352 is probably affiliated with the Late Woodland period and may be associated with the Boone Phase of central and east-central Missouri; suggested dates range from 1500-1000 B.P. Both Boone Plain and Moreau or Boone Cord Marked pottery types are identified as Boone Phase in the Late Woodland period (Chapman 1980:276-277; 288-289; Denny 1964:96-99, 72-75), and Darnell or Graham Cord Marked and Graham Plain pottery types probably are associated with Late Woodland peoples (Chapman 1980:280-281). All four pottery types are found primarily in the Lower Missouri Valley II Locality (Chapman 1980:276, 280-281, 289). The site's location on an alluvial terrace suggests a high potential for buried cultural deposits.

### 23 CY 353

The site is probably a reoccupied seasonal camp and knapping station. Analysis of the chert artifacts from 23 CY 353 indicates a predominant utilization of Burlington chert (71%), probably procured entirely from stream deposited sources, and a supplemental role (29%) for Jefferson City chert. Even among the Jefferson City chert that was used, there was a tendency to procure it from nearby stream deposited sources rather than from residual sources.

Examination of the debitage suggests primary, secondary, and tertiary reduction on the site. Activities other than flint knapping suggested by tool types include hunting and butchering, hide processing, and plant food preparation/processing. The incidence of heat treatment among Burlington chert tools was very high at this site -- 68% of the tools are thermally altered as compared to 23% of the debitage.

The diagnostic tools found at 23 CY 353 indicate a multicomponent site with predominantly Archaic and Woodland occupations. Although possibly inhabited during the Early Archaic period, the major components suggested by the surface collection tentatively have been affiliated with the Middle to Late Archaic (7000-2500 B.P.) and Late Woodland (1500-1000 B.P.) periods. The site's terrace setting provides the potential for buried cultural deposits.

### 23 CY 356

The site is a seasonal camp and knapping station with a probable mortuary mound complex located on the south end of the site. Five low earthen mounds were located, recorded, and tested with a soil probe. Analysis of the chert artifacts from 23 CY 356 indicates an unexpected preference for Burlington chert, probably procured entirely from stream deposited sources, and a supplemental role for nearby Jefferson City chert.

Other activities suggested by the tool types and debitage include

hunting and butchering, drilling, plant food processing, and human burial. Twenty-two bifacial thinning flakes indicate a fair amount of biface manufacture/maintenance, and at least three pieces of fire-cracked rock suggest the presence of a hearth on the site.

The diagnostic artifacts found at 23 CY 356 indicate a multi-component site with predominantly Archaic and Woodland occupations. The two Big Sandy Notched points located by the survey are associated with the Middle Archaic period ca. 7000-5000 B.P. (Chapman 1975:242), and the two Big Sandy-like points represent styles which may have persisted into the Late Archaic period.

The major component at 23 CY 356 is affiliated with the Late Woodland period (1500-1000 B.P.) and may represent a manifestation of the Boone Phase in east-central Missouri. The setting high on a bluff overlooking the Missouri River Valley is consistent with the location of Boone Phase mounds (Denny 1964:137), and the mounds are sometimes constructed entirely of earth (Chapman 1980:112). The grit tempered sherd (Graham Plain) found on mound A is similar to Late Woodland pottery found at Graham Cave and Arnold Research Cave (Chapman 1980:121). In addition, the Rice Side Notched, Steuben Expanded Stemmed, and Scallorn Corner Notched projectile points found on the site are all characteristic of Late Woodland Boone Phase (Chapman 1980:115). This Late Woodland component is probably associated with the village or residential base camp (23 CY 352) located on the adjacent terrace directly below or west of the ridge and 23 CY 356.

#### 23 CY 359

From the small (selective) amount of material collected during the preliminary reconnaissance, it is evident that the site is probably a seasonal camp and knapping station. Although the small selective sample is biased toward tools, there was no bias in collecting artifact chert types. A chert analysis indicates that there may have been a preference

for making tools out of Burlington chert since all of the projectile points and all but one biface were knapped from this fossiliferous chert. Activities other than flint knapping suggested by the tool types include hunting and butchering and plant food processing.

The diagnostic artifacts indicate the site is multicomponent with predominantly Archaic and Woodland occupations. The side-notched point tentatively identified as Graham Cave Notched suggests the site may have been occupied during the Early Archaic (10,000-7000 B.P.) period (Chapman 1975:249) and the Big Sandy-like point probably representing the Middle to Late Archaic period (7000-3000 B.P.). The expanding stemmed Steuben point is restricted to the Middle Woodland and Late Woodland periods (Chapman 1980:313), and the Scallorn Corner Notched arrow point is a Late Woodland (1500-1000 B.P.) point type (Chapman 1975:312).

#### Significant Historic Archaeological Sites

Identifying potentially significant historic archaeological sites which date from the mid nineteenth to early twentieth centuries is difficult at this time. Many states are in the process of preparing state management plans; and, when this is completed, historic research problems which might be answered through archaeological research during this time span will be forthcoming. The State of Missouri is working on such a plan; and, when it is available, it will provide a research framework which will facilitate the evaluation of individual historic sites.

As indicated earlier, many of the former homes and farmsteads in the study area were razed and impacted by subsequent clearing. As a result, archaeological integrity is lacking at most of the sites; however, two sites appear to be potentially significant and offer some potential for further archaeological and historical research.

Site 23 CY 261 is an undisturbed homestead in the upland prairie

zone. The artifact assemblage from the site ranges from ca. 1840-1929. The site is depicted on early maps in 1876, 1897, and 1919. This evidence indicates some continuity from the mid nineteenth century to the early twentieth century. This was a period of rapid change in central Missouri, and the apparent undisturbed nature of the deposits may offer an opportunity to study this change in the archaeological record.

Site 23 CY 339 is a log structure, partially in ruin, located in the rugged forest zone in the southern part of the study area (Map 2). The site's unique location on a rocky hillside poses interesting historical research questions.

#### Historic Architectural Sites

When measured against the criteria of the National Register of Historic Places, the historic architectural sites and features do not appear to represent a significant level of innovation, uniqueness, or artistry. While they may be potential candidates for preservation, they are best categorized as standard examples of their respective building types. For more detailed information on the architectural resources, the reader is referred to the Phase I cultural resources survey report (Ray et al. 1984).

#### Potential Adverse Impacts

Protecting and preserving cultural resources from a variety of destructive activities stimulated by an expanding society is fundamental to cultural resources management. The recognition over 75 years ago that archaeological and historical sites were being destroyed and would continue to be destroyed provided the impetus for the enactment of the Antiquities Act of 1906. Today, two types of adverse impacts, direct and indirect, are recognized (Schiffer and House 1975). Direct impacts are usually major land altering activities carried out in conjunction



with road, reservoir, pipeline, stock pond, and landfill construction, to mention just a few. The effect of such activities on fragile, non-renewable cultural resources is obvious and often decisive. There are direct impacts that are much less destructive than these major construction activities. Cultivation related to agricultural production, logging activities, trenches for underground telephone cables, trenches for small diameter water lines, camp grounds, and development of picnic areas are examples of direct impact which are less destructive than the impacts from major construction. Each category of direct impact may have related indirect impacts. For example, various silvicultural harvesting techniques may have varying degrees of adverse effects to cultural resources; however, a new road constructed to the proposed logging area would be far more destructive to cultural resources than the actual timber harvest. Or, a 100-acre reservoir constructed in a ravine which contains no archaeological sites may have a variety of construction related indirect impacts (e.g., borrow areas used for dam fill) which may affect other archaeological sites. The construction of equestrian or hiking trails on the residual lands would have little or no direct adverse impacts to cultural resources, yet, potential indirect adverse impacts could be high due to increased public exposure to archaeological sites. For example, a hiking trail near the prehistoric mound (23 CY 74, Map 2) would increase the opportunities for vandalism, malicious looting, or uninformed collecting. Some examples of potential indirect impacts might include increased public usage of all recreational facilities on the residual lands, soil erosion on archaeological sites, and timber harvesting.

Examination of these potential impacts serves to point out the need for a cultural resources management plan and the usefulness of a management plan as a short and long range planning tool, both for Union Electric Company and the Missouri Department of Conservation.

Generally, the current land use management plan which emphasizes wildlife management and recreation is compatible with the needs of cultural resources management. Potential adverse impacts from cultivation, erosion, trail construction, picnic grounds, silviculture, etc., are not as destructive as some other types of activities. Also, agricultural crop rotation may be altered easily to accommodate archaeological site preservation without compromising the requirement of wildlife food and habitat production. For example, limited agricultural activities could occur at some of the potentially significant archaeological sites without adverse effects to the site. The various types of land use restrictions and limitations will be central to the specific management recommendations.

#### Management Recommendations and Guidelines

The key management elements with regard to the prehistoric and historic archaeological sites which will be of primary concern to Union Electric Company and the Missouri Department of Conservation will be current land use, land use limitations, and the statement of potential National Register eligibility.

The four primary types of land use on the residual lands are cemeteries, agricultural, nonagricultural, and operation and maintenance of the power plant. Cemeteries consist mostly of small family plots, long abandoned and overgrown with brush and weeds. Agricultural use includes row crop, pasture, and related agricultural land usage. Nonagricultural use consists of forest, brush, and weeds. The land use and ground cover notations (Table 1) reflect conditions at the time of survey in the fall and winter of 1981.

For management purposes, land use recommendations consist of three types of limitations: (1) subplow zone disturbance, (2) avoid, and (3) limited agriculture (Table 1). A land use limitation of "subplow zone" is recommended at all sites which are not considered potentially

eligible for nomination to the National Register but will be protected by the recommendations in this management plan. Avoidance requires that a site's surface and subsurface integrity be maintained by prohibiting land altering activities. All potentially eligible sites which are in forest vegetation and all historic cemeteries are to be avoided.

Current state cultural resources management guidelines recommend Phase II testing of potentially eligible sites identified during the Phase I survey to further evaluate National Register eligibility (Welchman 1979). Only three potentially eligible sites (23 CY 20, 23 CY 352, and 23 CY 359; Table 2) are located in an area of potential environmental impact related to the operation and maintenance of the plant or associated facilities. Nomination forms for each these three potentially eligible sites will be completed and submitted to the Keeper of the National Register of Historic Places. The other 22 sites identified as potentially eligible for nomination to the National Register of Historic Places will be protected from adverse impact by placing a conservative protection boundary zone around each site. The protection boundary will range from 50 m to 100 m depending upon site specific circumstances. For example, at many sites, the boundary stakes are set along the fence line even though the artifact distribution is well out in the field.

Limited agriculture can continue at potentially significant sites presently being used for agricultural purposes. Limited agricultural activity with reference to potentially significant archaeological sites permits shallow discing to allow the sowing of grass seed. The rationale for this recommendation is threefold. First, these sites are often surrounded by major row crop areas and to allow brush and forest vegetation to return could be inconvenient to other agricultural activities. Second, if the sites are allowed to return to a natural state and at a later date require Phase II testing, the removal of brush

Table 2

## Management Recommendations for Potentially Significant Sites

Site No 23CY-	Size (Acres)	Location	Cultural Affiliation	Ground Cover	Land Use Limitations+	Cultural Resources Management Recommendations*
20	7.4	SE <sub>1</sub> , NW <sub>1</sub> , SW <sub>1</sub> , S35	Middle Woodland	Weeds	Limited Agri	Preserve, Phase II if threatened Earth moving assoc with O&M prohibited
74	.1	SW <sub>1</sub> , NW <sub>1</sub> , SE <sub>1</sub> , S35	Middle-Late Woodland Burial mound	Forest	Avoid	Preserve, Phase II if threatened
256	5.9	NE <sub>1</sub> , SE <sub>1</sub> , SE <sub>1</sub> , S11	Middle Archaic	Crop	Limited Agri	Preserve, Phase II if threatened
257	14.8	SE <sub>1</sub> , NW <sub>1</sub> , SE <sub>1</sub> , S1	Late Archaic	Brush, crop	Limited Agri	Preserve, Phase II if threatened
267	8.2	NW <sub>1</sub> , SW <sub>1</sub> , SW <sub>1</sub> , S2	Paleo-Indian	Crop	Limited Agri	Preserve, Phase II if threatened
291	6.0	W <sub>1</sub> , NW <sub>1</sub> , SW <sub>1</sub> NE <sub>1</sub> , NE <sub>1</sub> , SE <sub>1</sub> , S6	Unknown	Crop	Limited Agri	Preserve, Phase II if threatened
303	14.8	SE <sub>1</sub> , SE <sub>1</sub> , S10	Unknown	Crop	Limited Agri	Preserve, Phase II if threatened
304	3.2	NW <sub>1</sub> , NW <sub>1</sub> , SE <sub>1</sub> , S10	Late Woodland Mississippian	Crop	Limited Agri	Preserve, Phase II if threatened
309	13.6	E <sub>1</sub> , NW <sub>1</sub> , NE <sub>1</sub> , S10	Late Archaic	Crop	Limited Agri	Preserve, Phase II if threatened
314	.25	NE <sub>1</sub> , NE <sub>1</sub> , NE <sub>1</sub> , S11	Unknown	Crop	Limited Agri	Preserve, Phase II if threatened
321	10.5	NE <sub>1</sub> , SW <sub>1</sub> , NE <sub>1</sub> , S15	Unknown	Crop	Limited Agri	Preserve, Phase II if threatened
322	4.5	SW <sub>1</sub> , NE <sub>1</sub> , NE <sub>1</sub> , S22	Late Woodland Mississippian	Weeds	Limited Agri	Preserve, Phase II if threatened
328	1.0	NW <sub>1</sub> , SW <sub>1</sub> , SE <sub>1</sub> , S23	Late Archaic?	Crop	Limited Agri	Preserve, Phase II if threatened

+Limited Agriculture-see page 38

Avoid-see page 39

\*O&amp;M-operation and maintenance

Table 2 (cont.)

Site No 23CY-	Size (Acres)	Location	Cultural Affiliation	Ground Cover	Land Use Limitations†	Cultural Resources Management Recommendations*
334	1.1	S½, NW¼, NE¼, S25	Unknown	Forest	Avoid	Preserve, Phase II if threatened
345	1.25	S½, SE¼, NE¼ NE¼, NE¼, SE¼, S35	Middle Archaic	Grass	Limited Agri	Preserve, Phase II if threatened
346	10.0	N½, NW¼, SE¼ SE¼, SW¼, NE¼, S35	Early Archaic Dalton	Grass	Limited Agri	Preserve, Phase II if threatened
349	2.5	W½, NW¼, SE¼, S35	Late Woodland	Forest	Avoid	Preserve, Phase II if threatened
350	.1	SW¼, NW¼, SE¼, S35	Late Woodland Burial mound?	Forest	Avoid	Preserve, Phase II if threatened
41 351	5.0	W½, NE¼, SE¼ NE¼, NE¼, SE¼, S35	Unknown	Grass	Limited Agri	Preserve, Phase II if threatened
352	6.2	NW¼, NE¼, SW¼ NE¼, NW¼, SW¼, S36	Middle and Late Woodland	Crop	Limited Agri	Earth Preserve, Phase II if threatened moving assoc with O&M prohibited
353	8.4	E¼, NE¼, NW¼, S36	Middle and Late Archaic	Crop	Limited Agri	Preserve, Phase II if threatened
356	11.0	N½, NE¼, SW¼ SE¼, SE¼, NW¼, S36	Middle Archaic Late Woodland	Weeds	Limited Agri	Preserve, Phase II if threatened
359	30.0	W½, NW¼, S36	Middle Archaic Late Woodland	Grass	Close upper road to prevent erosion; Avoid	Earth Preserve, Phase II if threatened moving assoc with O&M prohibited
261	1.0	NE¼, NE¼, NW¼, S13	Historic	Grass	Limited Agri	Phase II evaluation if threatened
339	1.0	SE¼, SE¼, NW¼, S25	Historic	Forest	Avoid	Phase II evaluation if threatened

and trees would be expensive and harmful to the site. Third, the sites could be used for hay production and grazing without adverse effects to the cultural resources.

Final management considerations and objectives are: to preserve the potentially significant archaeological sites in place, provide recommendations for nonsignificant resources, and provide specific guidelines for potentially significant archaeological sites for Union Electric Company and Missouri Department of Conservation. The following guidelines will insure site preservation and facilitate the management objectives of Union Electric Company.

To insure the identification and preservation of all prehistoric archaeological sites and these sites potentially eligible for nomination to the NRHP, metal reinforcing rod stakes have been placed at the corners of all sites along field edges. Boundaries which fall within agricultural fields (pastures) are marked with wooden lath to avoid damaging farm machinery. All stake tops are sprayed with orange paint and marked with yellow plastic flagging. The boundaries are placed approximately 50 m to 100 m beyond site limits to provide a proper buffer zone.

In addition, all archaeological sites are identified with an aluminum plate affixed to a reinforcing rod upon which is painted the Archaeological Survey of Missouri site number (Figure 1). These site numbers are keyed to confidential site location maps and field notes describing the marker and site locations. A map with accompanying notes will be on file at the Environmental Services Department of Union Electric Company and the headquarters of the Reform Wildlife Management Area.

1. Land altering activities are prohibited at all potentially significant archaeological sites (Table 1). These activities include, but are not limited to, road construction, water line excavation,



Figure 1.. Site Identification Marker

electrical and telephone line excavations, transmission line construction, pond and reservoir construction, building construction, electrical transmission substation construction, cultivation (deep plowing or chisel plowing), and silviculture.

2. Limited cultivation in the form of shallow discing is permissible in order to maintain grass cover on those sites where limited agriculture is recommended (Table 2).

3. Coordination with the Environmental Services Department of Union Electric Company should occur well in advance of any land use activities outside those found in Table 1 which may affect the potentially significant sites. The Environmental Services Department will insure identification of site boundaries, will establish buffer zones, and contact other regulatory agencies when appropriate.

4. Phase II testing for the purpose of further evaluating significance will not occur until a potentially significant site is threatened by adverse impacts (Table 2).

5. The architectural sites on the residual lands are not

eligible for nomination to the National Register of Historic Places and are not subject to land use limitations.

6. There is the remote possibility that the prehistoric and historic archaeological sites considered noneligible for nomination to the National Register may contain useful information. Current land use (i.e., farming) may occur at these sites but subplow zone activity is permitted only after consultation with the proper authorities.

7. For planning and management purposes, a USGS topographic map precisely locates all the cultural resources on the residual lands. If there is any question regarding the exact location of a site, the Environmental Services Department should be contacted.

8. There is the possibility that sites 23 CY 20, 23 CY 352, and 23 CY 353 contain buried cultural occupations. The Environmental Services Department should be aware of this, and future research plans should account for these buried deposits.

9. Although a very intensive survey was conducted, there is the possibility that undiscovered resources may be present. If artifacts or cultural features are encountered during construction projects, supervisors will be instructed to notify the Environmental Services Department immediately.

The Phase I cultural resources survey and assessment of the Callaway residual lands along with the several other survey and assessments of the direct impact zones adequately meet the letter and spirit of federal laws and regulations dealing with cultural resources. Further, responsible use of this management plan will insure the continued preservation of the potentially significant archaeological resources into the future.



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MOKANE EAST, MO.

NE/4 MOKANE 15' QUADRANGLE

N3837.5-W9145/7.5

1975

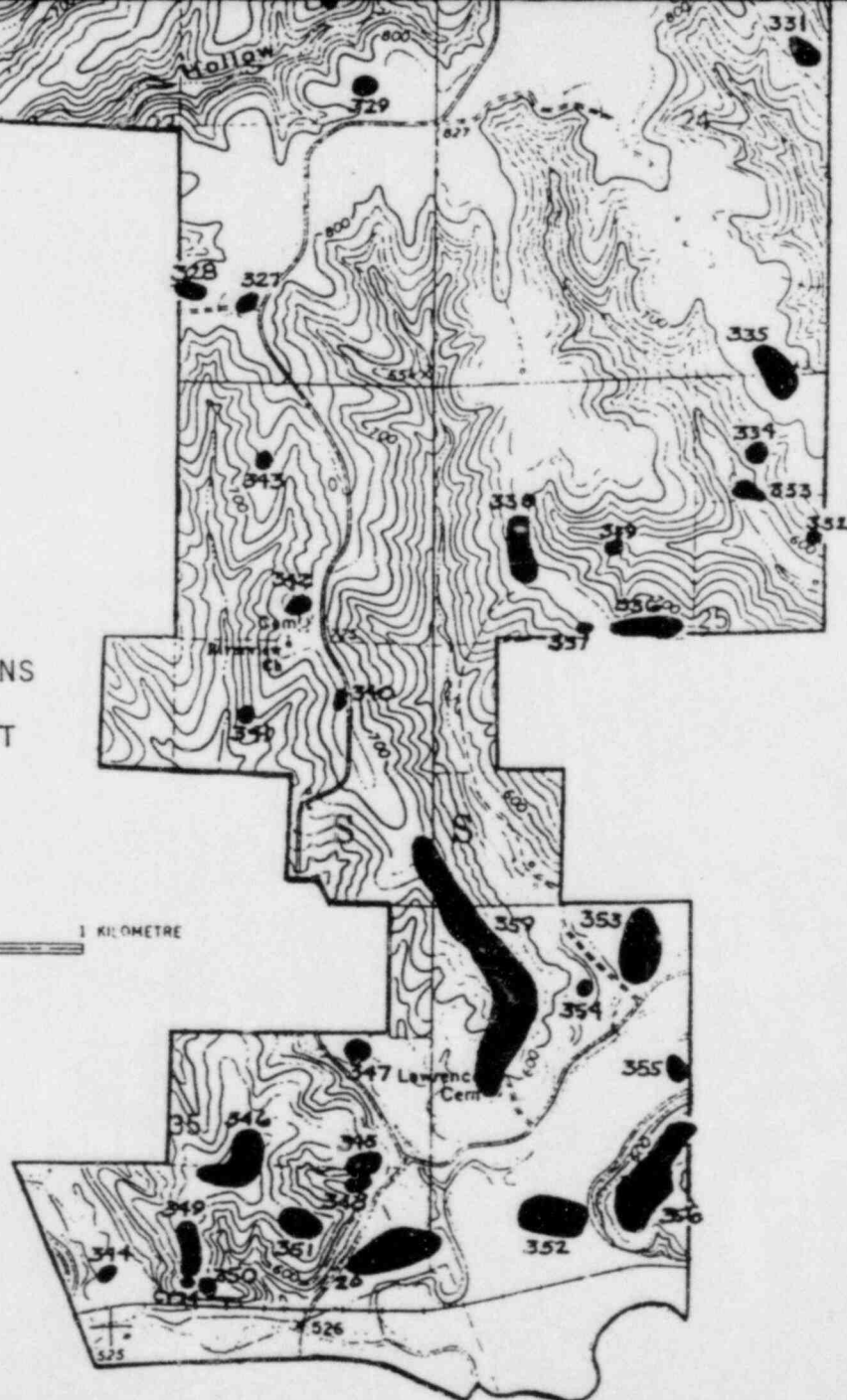
MAP SUPPLEMENT\*

ARCHAEOLOGICAL SITE LOCATIONS  
AT UNION ELECTRIC COMPANY  
CALLAWAY NUCLEAR POWER PLANT



CONTOUR INTERVAL 20 FEET

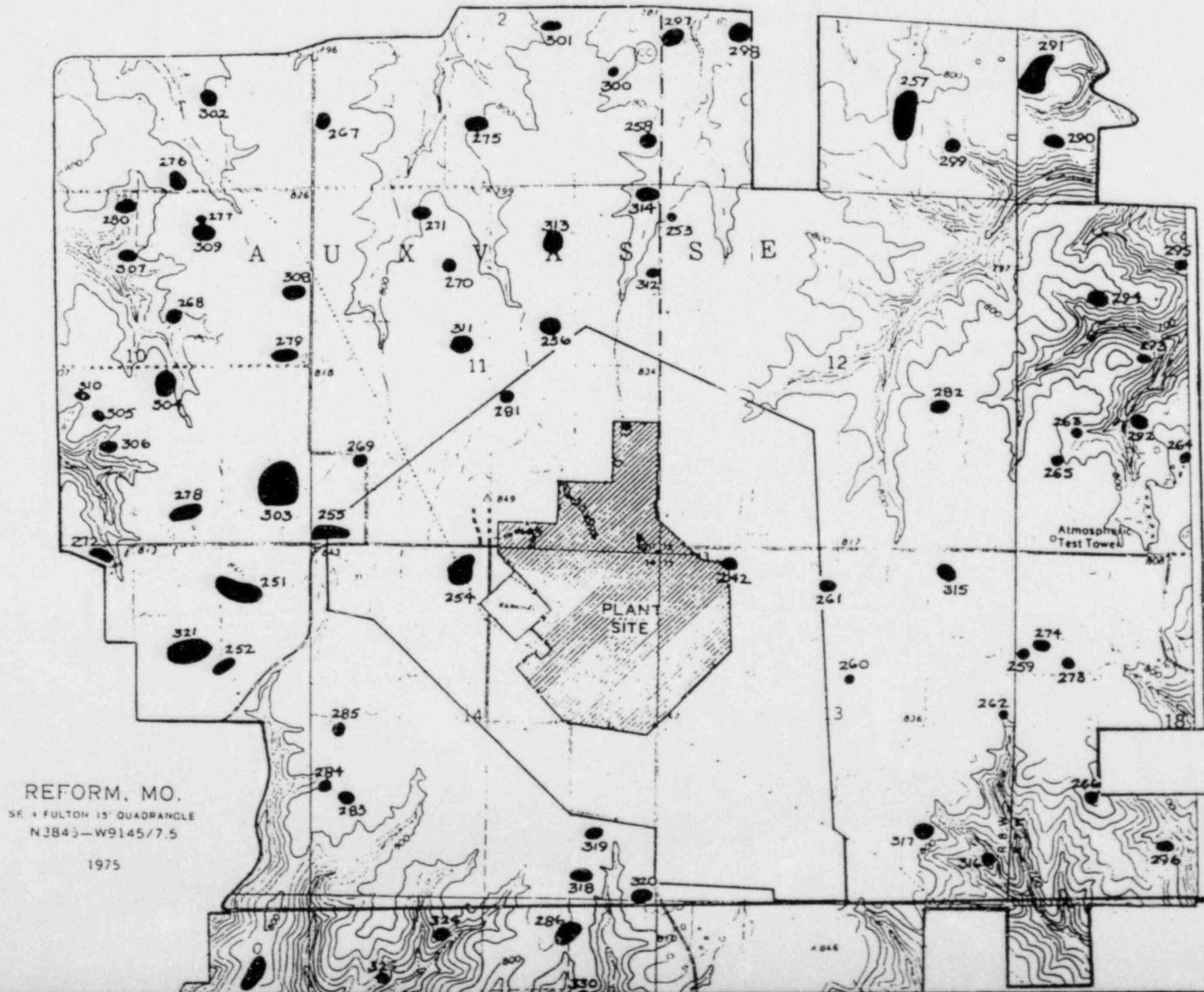
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\* This map is to accompany A Cultural Resources Management Plan for Residual Lands at the Union Electric Company Nuclear Power Plant, Callaway County, Missouri, October 1983

Also Available On  
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