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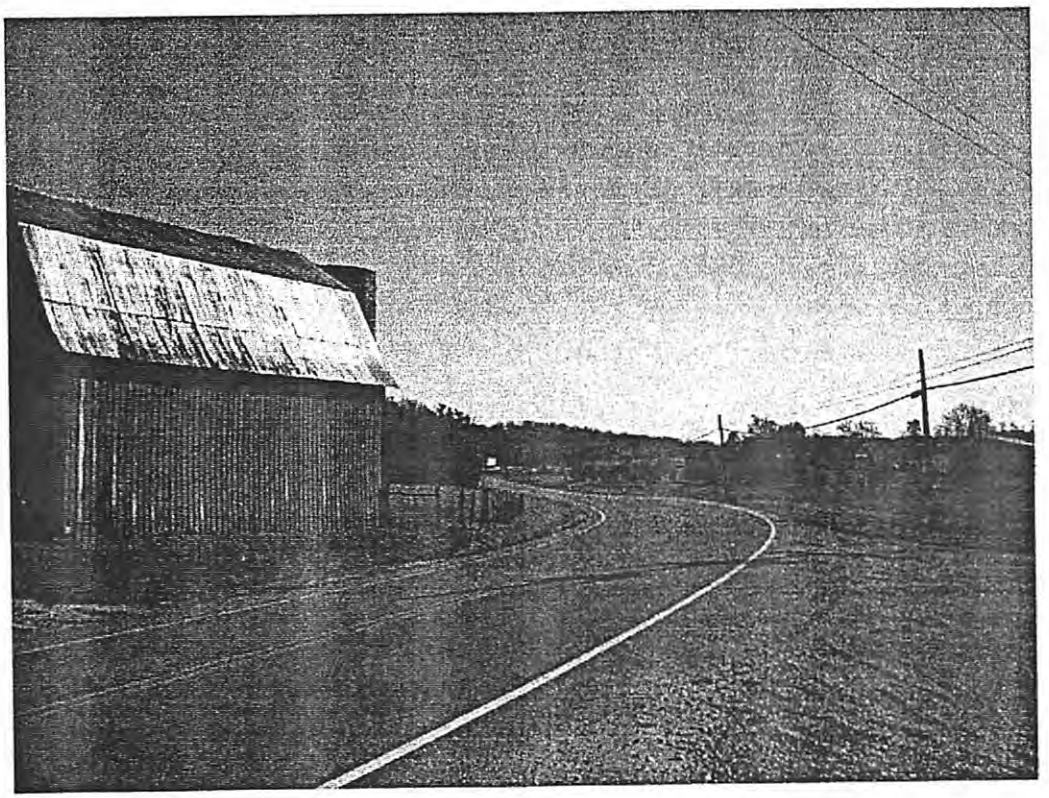
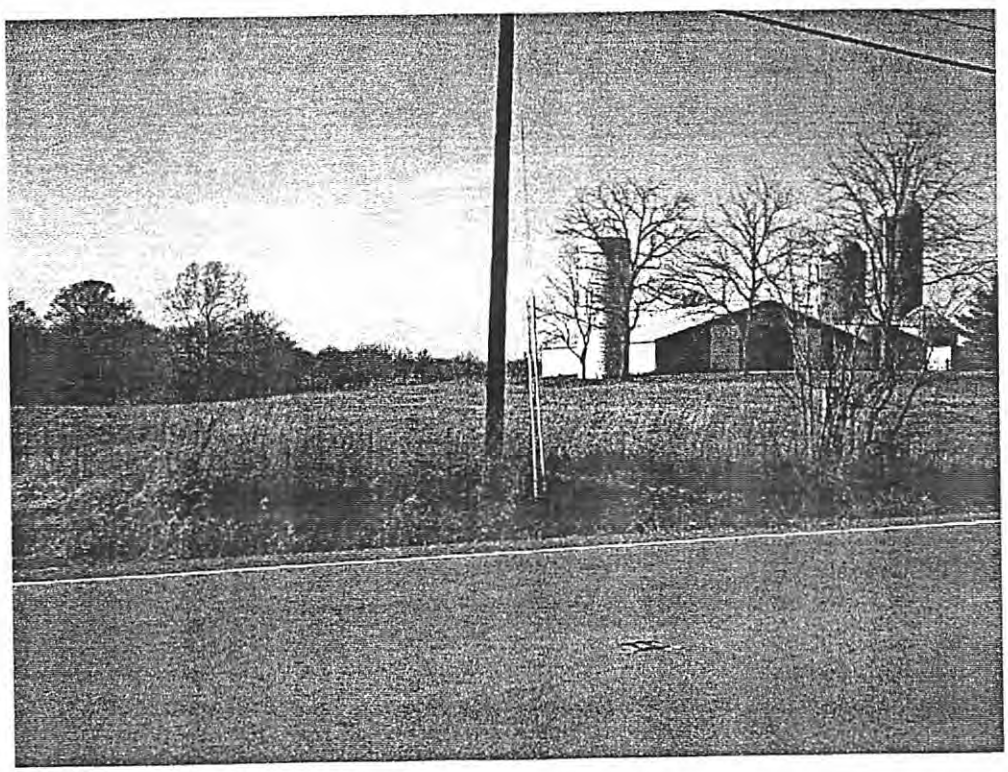
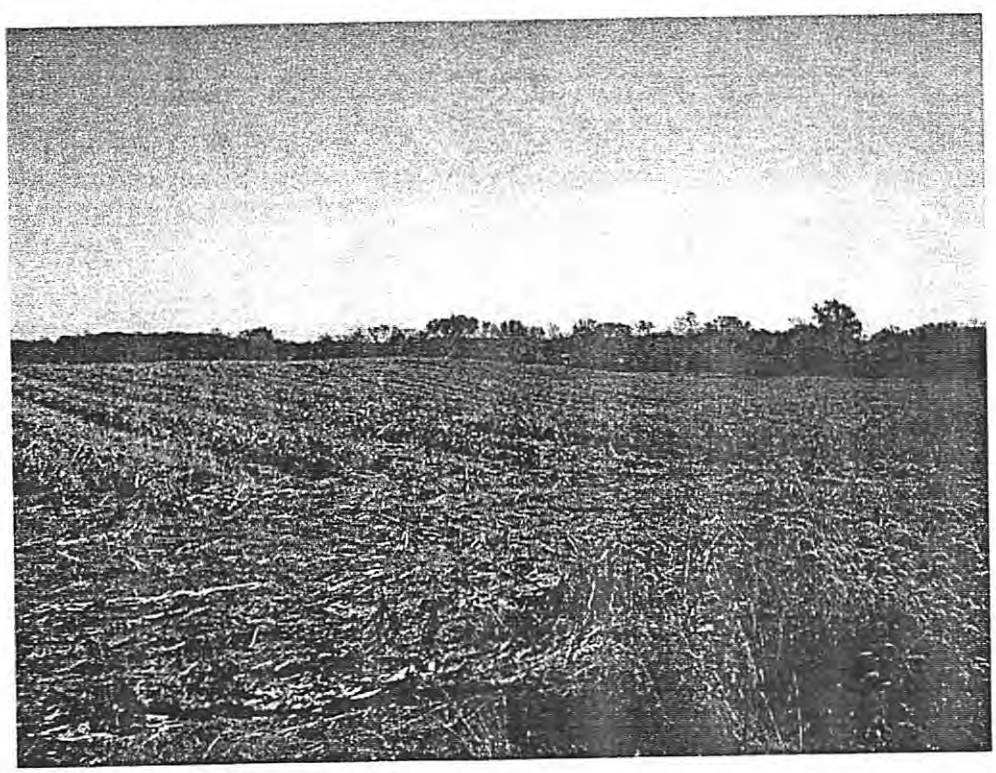
APPENDIX A

PHOTOGRAPHS

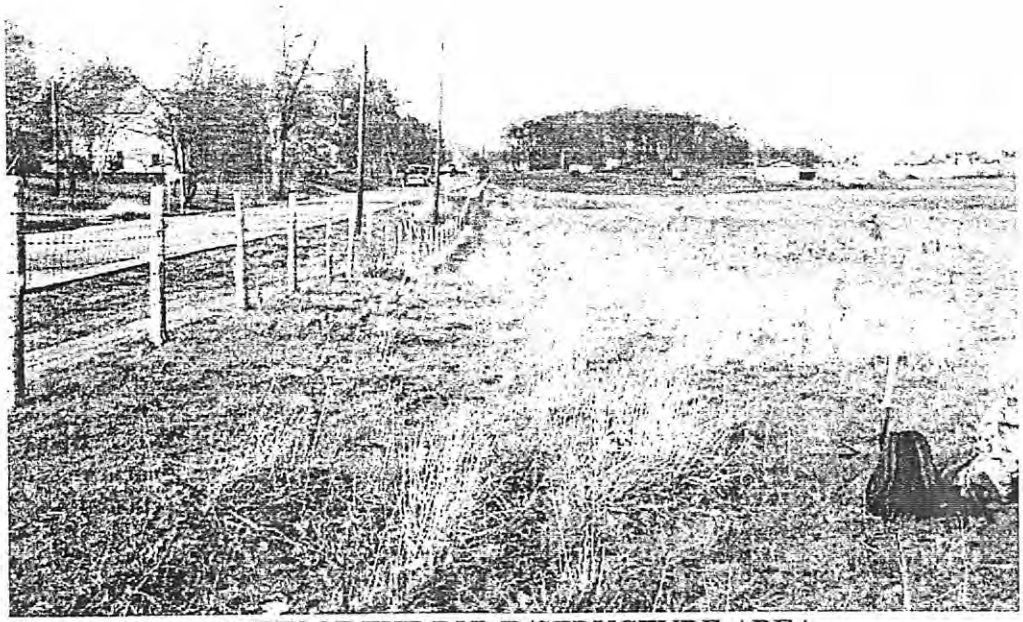


VIEWS OF VARIOUS PORTIONS OF THE PROJECT AREA

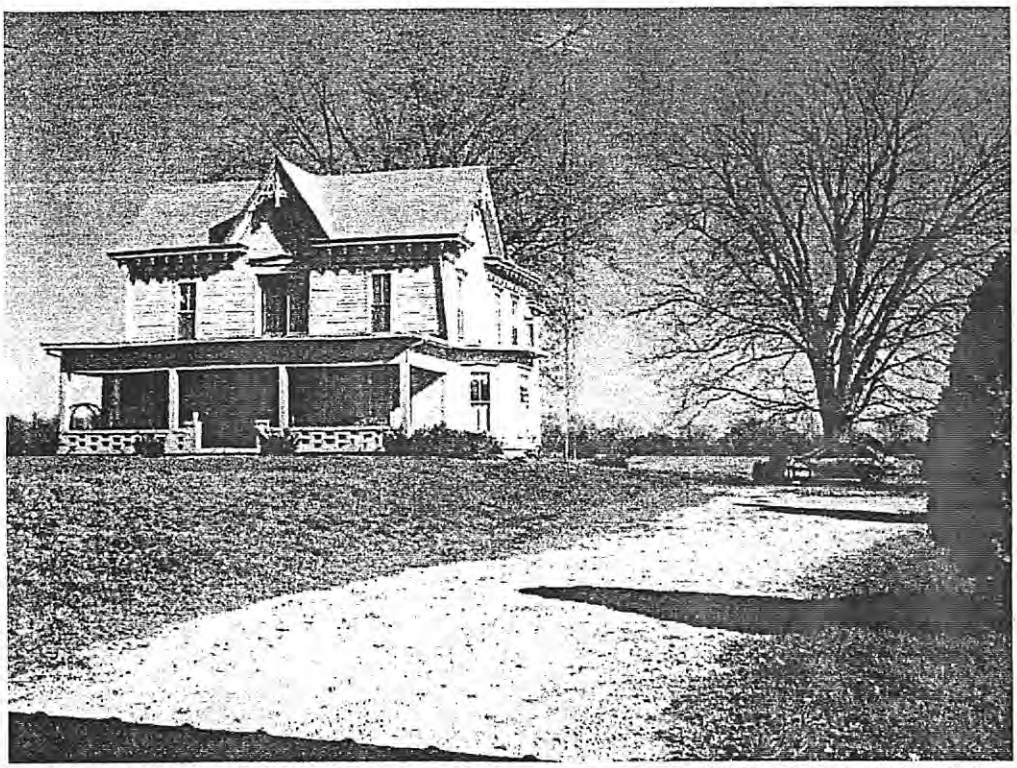




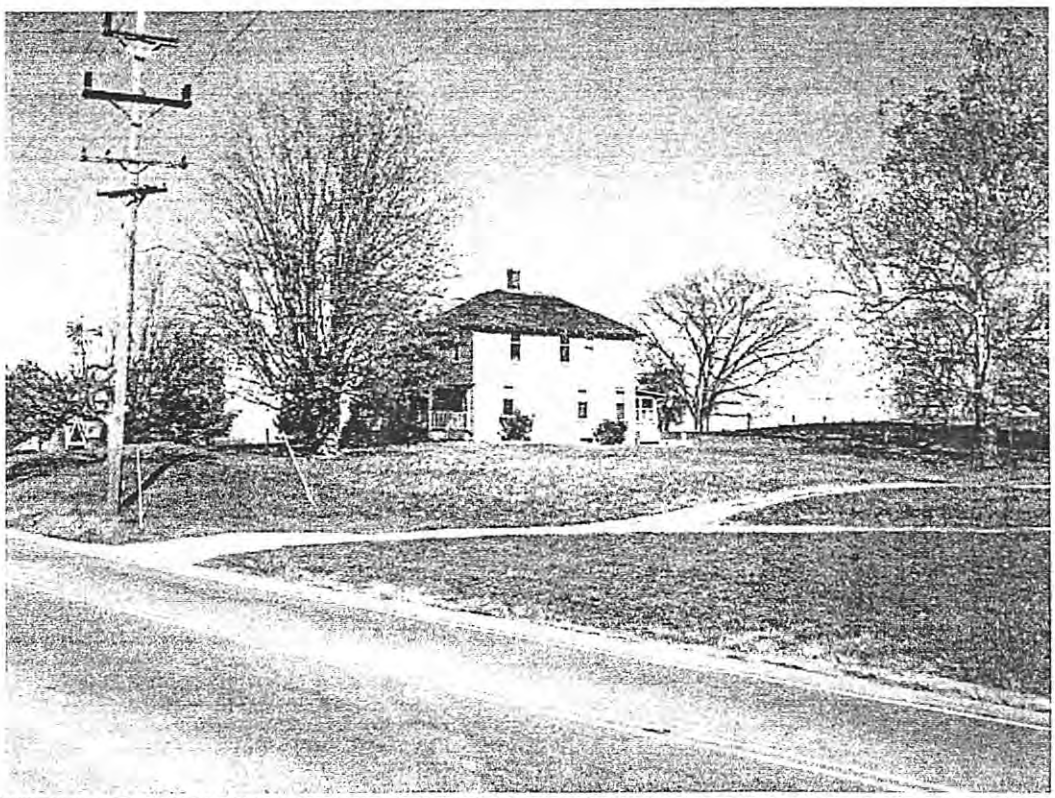
VIEWS OF SITE 12Or552 ON WEST AND EAST SIDES OF SR 37



VIEW OF THE DUMP/STRUCTURE AREA



VIEW OF HISTORIC STRUCTURE JUST NORTH OF LOST RIVER ON THE EAST SIDE OF SR 37



VIEW OF HISTORIC STRUCTURE JUST NORTH OF PAOLI ON EAST SIDE OF SR 37

Auger Probe 1			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR4/4	dark yellowish brown	silt loam
10-20	10YR4/4	dark yellowish brown	silt loam
20-30	10YR4/4	dark yellowish brown	silt loam
30-40	10YR3/4	dark yellowish brown	silty clay loam
40-50	10YR3/4	dark yellowish brown	silty clay loam
50-60	10YR4/6	dark yellowish brown	silty clay loam
60-70	10YR4/6	dark yellowish brown	silty clay loam
70-80	10YR4/6	dark yellowish brown	silty clay loam
80-90	10YR5/6	yellowish brown	silty clay loam
90-100	10YR5/6	yellowish brown	silty clay loam
100-110	Mottled 10YR5/6 and 10YR 5/2	yellowish brown/grayish brown	silty clay loam
110-120	Mottled 10YR5/6 and 10YR 5/2	yellowish brown/grayish brown	silty clay loam
Auger Probe 2			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/3	dark brown	silt loam
10-20	10YR3/3	dark brown	silt loam
20-30	10YR4/4	dark yellowish brown	silt loam
30-40	10YR4/4	dark yellowish brown	silty clay loam
40-50	10YR4/4	dark yellowish brown	silty clay loam
50-60	10YR4/4	dark yellowish brown	silty clay loam
60-70	10YR4/4	dark yellowish brown	silty clay loam
70-80	10YR4/4	dark yellowish brown	silty clay loam
80-90	10YR4/4	dark yellowish brown	silty clay loam
90-100	10YR4/4	dark yellowish brown	silty clay loam
100-110	10YR4/6	dark yellowish brown	silty clay loam
110-120	10YR4/6	dark yellowish brown	silty clay loam
Auger Probe 3			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/4	dark yellowish brown	silt loam
10-20	10YR3/4	dark yellowish brown	silt loam
20-30	10YR4/4	dark yellowish brown	silt loam
30-40	10YR4/4	dark yellowish brown	silt loam
40-50	10YR4/4	dark yellowish brown	silty clay loam
50-60	10YR4/4	dark yellowish brown	silty clay loam
60-70	10YR4/4	dark yellowish brown	silty clay loam
70-80	10YR4/4	dark yellowish brown	silty clay loam
80-90	10YR4/4	dark yellowish brown	silty clay loam
90-100	10YR4/4	dark yellowish brown	silty clay loam
100-110	10YR4/4	dark yellowish brown	silty clay loam

110-120	10YR4/4	dark yellowish brown	silty clay loam
Auger Probe 4			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/4	dark yellowish brown	silt loam
10-20	10YR3/4	dark yellowish brown	silt loam
20-30	10YR3/4	dark yellowish brown	silt loam
30-40	10YR3/4	dark yellowish brown	silt loam
40-50	10YR4/4	dark yellowish brown	silty clay loam
50-60	10YR5/6	yellowish brown	silty clay loam
60-70	10YR5/6	yellowish brown	silty clay loam
70-80	10YR5/6	yellowish brown	silty clay loam
80-90	10YR5/6	yellowish brown	silty clay loam
90-100	10YR5/6	yellowish brown	silty clay loam
100-110	Mottled 10YR5/6 with 10YR5/4	yellowish brown	silty clay loam
110-120	Mottled 10YR5/6 with 10YR5/4	yellowish brown	silty clay loam
Auger Probe 5			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR4/4	dark yellowish brown	silt loam
10-20	10YR4/4	dark yellowish brown	silt loam
20-30	10YR4/4	dark yellowish brown	silt loam
30-40	10YR4/4	dark yellowish brown	silt loam
40-50	10YR4/4	dark yellowish brown	silt loam
50-60	10YR4/4	dark yellowish brown	silty clay loam
60-70	10YR4/4	dark yellowish brown	silty clay loam
70-80	10YR4/4	dark yellowish brown	silty clay loam
80-90	10YR4/6	dark yellowish brown	silty clay loam
90-100	10YR4/6	dark yellowish brown	silty clay loam
100-110	10YR4/6	dark yellowish brown	silty clay loam
110-120	10YR4/6	dark yellowish brown	silty clay loam
gravel at 120 cm b.s.			
Auger Probe 6			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/4	dark yellowish brown	silt loam
10-20	10YR3/4	dark yellowish brown	silt loam
20-30	10YR3/4	dark yellowish brown	silt loam
30-40	10YR4/4	dark yellowish brown	silty clay loam
40-50	10YR4/4	dark yellowish brown	silty clay loam
50-60	10YR4/4	dark yellowish brown	silty clay loam

60-70	10YR4/4	dark yellowish brown	silty clay loam
70-80	Mottled 10YR4/6 with 10YR5/2	dark yellowish brown with grayish brown	silty clay loam
80-90	Mottled 10YR4/6 with 10YR5/2	dark yellowish brown with grayish brown	silty clay loam
90-100	Mottled 10YR4/6 with 10YR5/2	dark yellowish brown with grayish brown	silty clay loam
100-110	Mottled 10YR4/6 with 10YR5/2	dark yellowish brown with grayish brown	silty clay loam
110-120	Mottled 10YR4/6 with 10YR5/2	dark yellowish brown with grayish brown	silty clay loam
Auger Probe 7			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/2	very dark grayish brown	silt loam
10-20	10YR3/3	dark brown	silt loam
20-30	10YR3/3	dark brown	silt
30-40	10YR3/4	dark yellowish brown	silty clay loam
40-50	10YR3/4	dark yellowish brown	silty clay loam
50-60	10YR3/4	dark yellowish brown	silty clay loam
60-70	10YR3/4	dark yellowish brown	silty clay loam
70-80	10YR4/4	dark yellowish brown	silty clay loam
80-90	10YR4/4	dark yellowish brown	silty clay loam
90-100	Mottled 10YR4/4 with 10YR5/3	dark yellowish brown with brown	silty clay loam
100-110	Mottled 10YR4/4 with 10YR5/3	dark yellowish brown with brown	silty clay loam
110-120	Mottled 10YR4/4 with 10YR5/3	dark yellowish brown with brown	silty clay loam
Auger Probe 8			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/4	dark yellowish brown	silt loam
10-20	10YR3/4	dark yellowish brown	silt loam
20-30	10YR3/4	dark yellowish brown	silt loam
30-40	10YR3/4	dark yellowish brown	silty clay loam
40-50	10YR4/4	dark yellowish brown	silty clay loam
50-60	10YR4/4	dark yellowish brown	silty clay loam
60-70	10YR4/4	dark yellowish brown	silty clay loam
70-80	10YR4/6	dark yellowish brown	silty clay loam
80-90	10YR4/6	dark yellowish brown	silty clay loam
90-100	10YR4/6	dark yellowish brown	silty clay loam
100-110	10YR4/6	dark yellowish brown	silty clay loam
110-120	10YR5/6	yellowish brown	silty clay loam
Auger Probe 9			
Level (below	**Color**		**Texture**

surface)			
0-10 cm	10YR3/3	dark brown	silt loam
10-20	10YR3/3	dark brown	silt loam
20-30	10YR3/4	dark yellowish brown	silty clay loam
30-40	10YR3/4	dark yellowish brown	silty clay loam
40-50	10YR3/4	dark yellowish brown	silty clay loam
50-60	10YR3/4	dark yellowish brown	silty clay loam
60-70	10YR3/4	dark yellowish brown	silty clay loam
70-80	10YR3/4	dark yellowish brown	silty clay loam
80-90	10YR4/4	dark yellowish brown	silty clay loam
90-100	10YR4/4	dark yellowish brown	silty clay loam
100-110	10YR5/6	yellowish brown	compact silt loam
110-120	10YR5/6	yellowish brown	compact silt loam
Auger Probe 10			
Level (below surface)	**Color**		**Texture**
0-10 cm	10YR3/3	dark brown	silt loam
10-20	10YR3/3	dark brown	silt loam
20-30	10YR3/4	dark yellowish brown	silt loam
30-40	10YR3/4	dark yellowish brown	silt loam
40-50	10YR4/4	dark yellowish brown	silt loam
50-60	10YR4/4	dark yellowish brown	silt loam
60-70	10YR5/4	yellowish brown	silt loam
70-80	10YR5/6	yellowish brown	silt loam
80-90	Mottled 10YR5/2 with 10YR4/6	grayish brown with dark yellowish brown	silt loam
90-100	Mottled 10YR5/2 with 10YR4/6	grayish brown with dark yellowish brown	silt loam
100-110	Mottled 10YR5/2 with 10YR4/6	grayish brown with dark yellowish brown	silt loam
110-120	Mottled 10YR5/2 with 10YR4/6	grayish brown with dark yellowish brown	silt loam

A Phase Ia Archaeological Reconnaissance Survey for the Proposed Rehabilitation of United States Highway 150/ Indiana State Road 56, French Lick and Paoli Townships, Orange County, Indiana

By

Christopher Jackson, M.S., RPA

Archaeological Consultants of the Midwest, Inc.
P.O. Box 39146
Indianapolis, Indiana 46239

Project: 02-25 **Date:** November 30, 2002

A Phase Ia Archaeological Reconnaissance Survey for the Proposed Rehabilitation of United States Highway 150/Indiana State Road 56, French Lick and Paoli Townships, Orange County, Indiana

By:

Christopher Jackson, M.S., RPA

Submitted by:

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Lead Agency:

Indiana Department of Transportation

ABSTRACT

In November 2002, Butler, Fairman and Seufert contracted Archaeological Consultants of the Midwest to conduct a Phase Ia reconnaissance survey for the proposed rehabilitation of United States Highway 150/Indiana State Road 56 (Indiana Department of Transportation Number STP-024-2(),Des Number 9804680) in Orange County, Indiana.

The project area consisted of agricultural fields, pastures, fallow fields, yards, visually disturbed areas, and woodlots. The project area was surveyed via pedestrian survey, shovel probing, soil coring, and visual inspection.

Thirteen sites (12Or738 to 12Or750) were inventoried during this investigation. These sites consist of three isolated finds, five lithic scatters, one historic scatter, one homestead, one farmstead, one foundation remnants, and one structural remnants.

Soil coring and shovel probing on the floodplains that are situated within the project area indicate that there is the potential for buried cultural horizons on many of these floodplains. As a result of this, it is recommended that a Phase Ic investigation needs to be undertaken on these floodplains prior to any construction activities.

While it is understood that further work on sites 12Or738, 12Or739, 12Or741 to 12Or747, 12Or749, and 12Or750 may yield additional artifacts, it is believed that these artifacts will not provide data that will enhance our knowledge of the history/prehistory of the area. As a result of this, these sites fail to meet the minimum criteria for inclusion on the National Register of Historic Places. No further work is recommended on these sites.

Site 12Or740 is a lithic workshop situated on a ridgetop and its slopes. Since no diagnostic artifacts were collected, the cultural/temporal association of the site could not be ascertained. An examination of the lithic materials indicated that most of it consists of St. Louis chert, which is from Kentucky. Due to this, it is believed that the site is associated with the Paleoindian and/or Early Archaic period of prehistory. Due to the lithic material collected from the site, the number of artifacts collected, and the potential temporal occupation of the site, it is recommended that further work on site 12Or740 may yield data that will enhance our knowledge of the prehistory of the area. Consequently, the site is potentially eligible for inclusion on the National Register of Historic Places. Therefore, it is recommended that a Phase II investigation on site 12Or740 is warranted and should be undertaken prior to any construction activities.

At site 12Or748, the project area traverses only the southern edge of the site. Shovel probes in this area did not encounter a subsurface in situ cultural horizon. It is believed that further work in this area of the site will not provide data that will increase our knowledge of the site, or the history of the area. Therefore, it is recommended that no further work is needed on this section of site 12Or748. However, if the site is impacted by future construction, then further work (Phase Ib) will need to be undertaken on the site in order to better determine if the site is potentially eligible for inclusion on the NRHP.

INTRODUCTION

In November 2002, Butler, Fairman, and Seufert Consulting Engineers contracted Archaeological Consultants of the Midwest to undertake a Phase Ia reconnaissance survey for the proposed rehabilitation of United States (US) Highway 50/Indiana State Road (SR) 56 (Indiana Department of Transportation [INDOT] Number STP-024-4 (), Des. Number 9804680) in Orange County, Indiana (Figure 1). The project area begins at the intersection of US Highway 50 and SR 56, just east of the town of Prospect, French Lick Township, and terminates just west of the town square in Paoli, Paoli Township, Orange County, Indiana (Figure 2).

The project area is 14.5 km (9 miles) in length and 60 m (197 ft) in width. In all, the project area traverses (east to west) Sections 1 and 2, T1N, R1W, Paoli Township; Sections 35, 34, 33, 32, 29, and 30, T1N, R2W, Paoli Township; and Sections 25, 26, and 27, T2N, R2W, French Lick Township.

This project is mandated under Section 106 of the National Historic Preservation Act of 1966.

There are two questions that will guide this investigation. These questions are:

1. Are there any archaeological sites situated in the project area?

2. Are any of the site(s) potentially eligible for inclusion on the National Register of Historic Places (NRHP)?

These two questions will be dealt with in the results of the field reconnaissance section of the report.

Christopher Jackson, M.S., RPA, was the field director, while the field crew consisted of David Blanton and Ronnica Robbins. The field reconnaissance occurred between November 12 and November 21, 2002. Flora Church, Ph.D., served as the principal investigator, while Kimberly Jackson was the project manager.

This report will present the methods utilized during the reconnaissance survey, the results of the reconnaissance survey, site descriptions, and an evaluation of each site's potential for inclusion on the NRHP. The environmental and cultural backgrounds, as well as the results of the literature review were presented in Schwegman (2002) [Appendix A]. Because of this, those sections of the report will not be dealt with in this report. The report follows the format that is suggested in *Guidebook for Indiana Historic Sites and Structures Inventory—Archaeological Sites* (Division of Historic Preservation and Archaeology [DHPA] 2001).

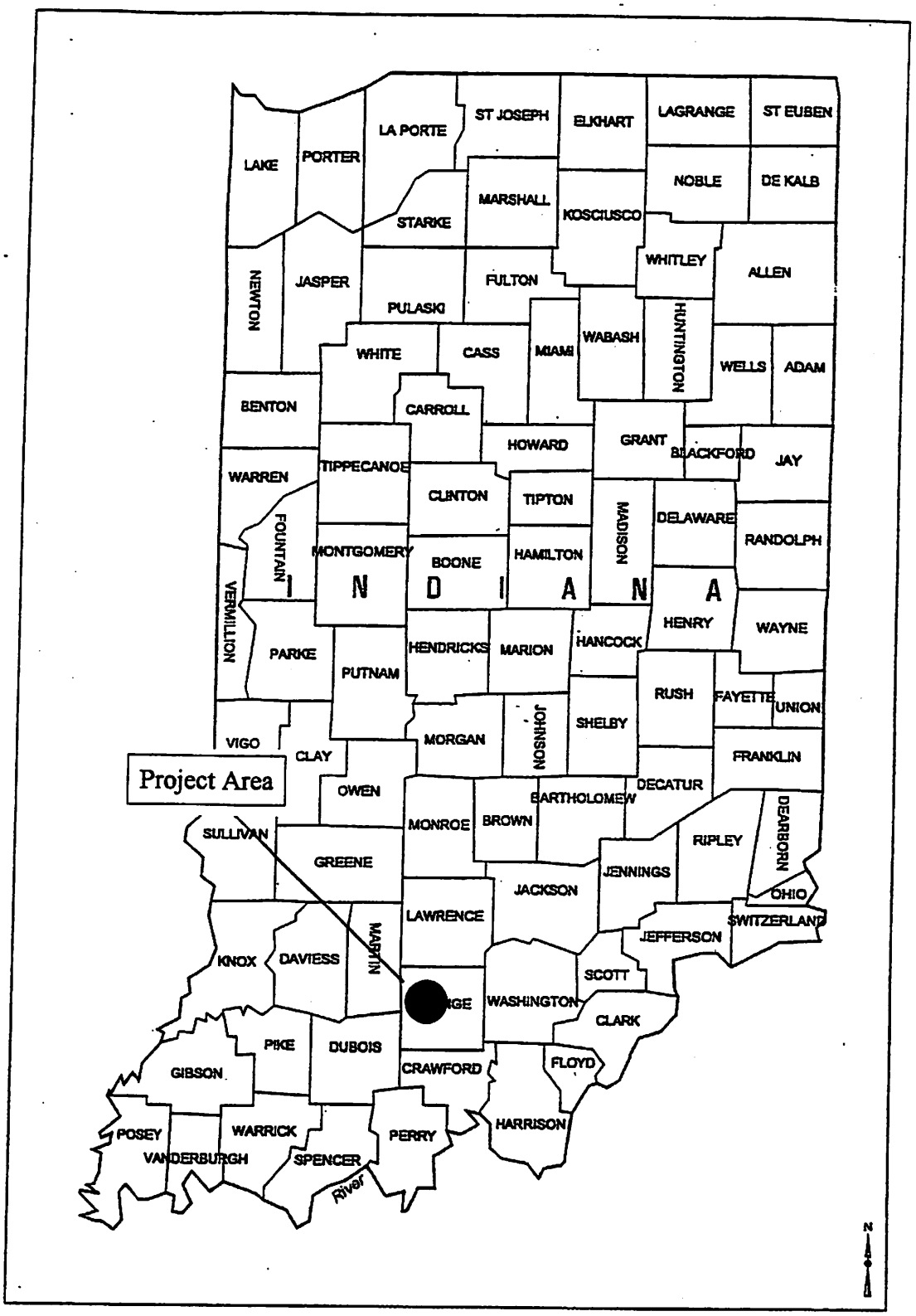
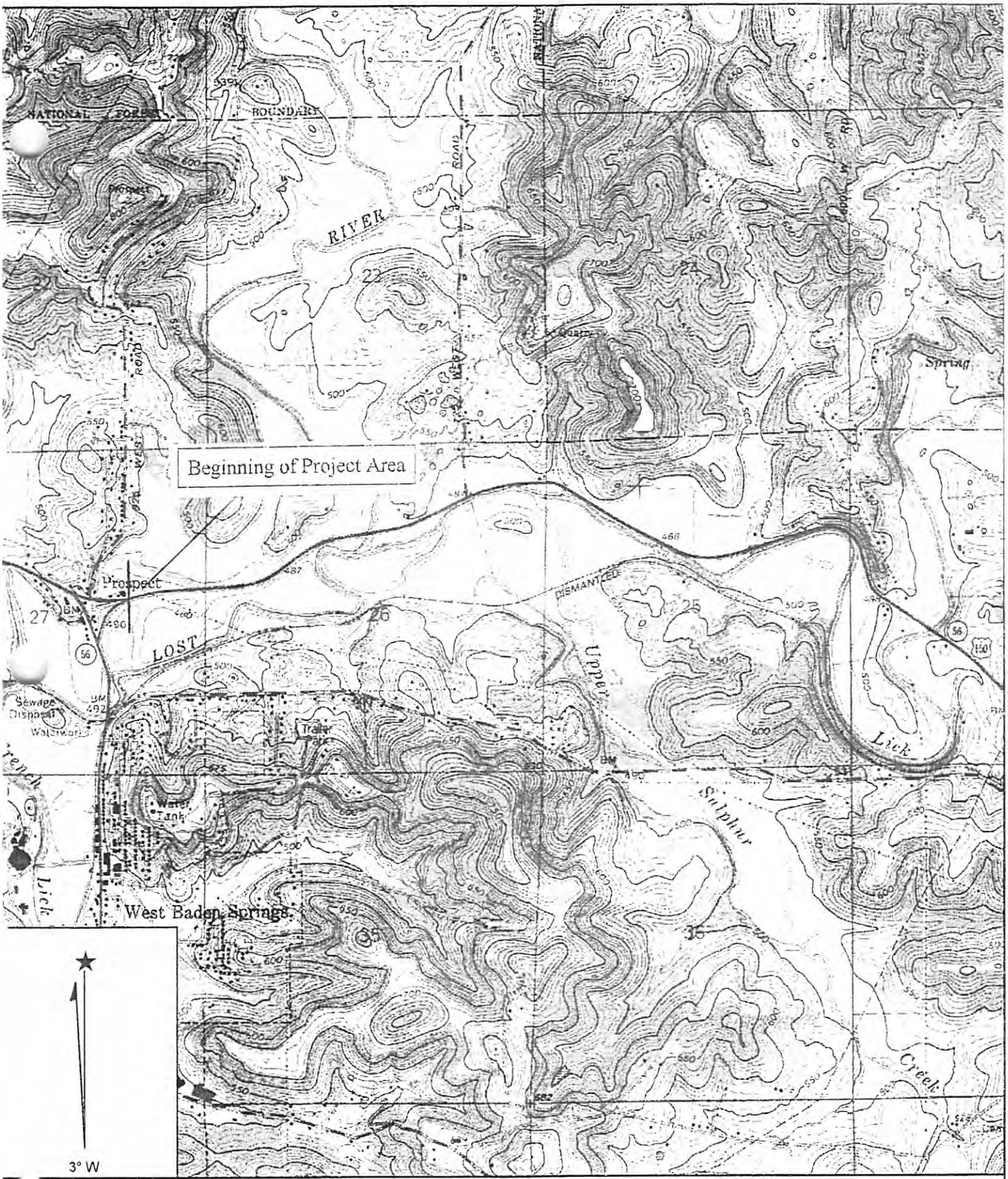


Figure 1: Map of Indiana showing the general location of the project area.

Figure 2: USGS French Lick and Paoli quadrangles (7.5' topographic maps) showing the location of the project area.



ne: FRENCH LICK
Date: 11/29/2002
Scale: 1 inch equals 2000 feet

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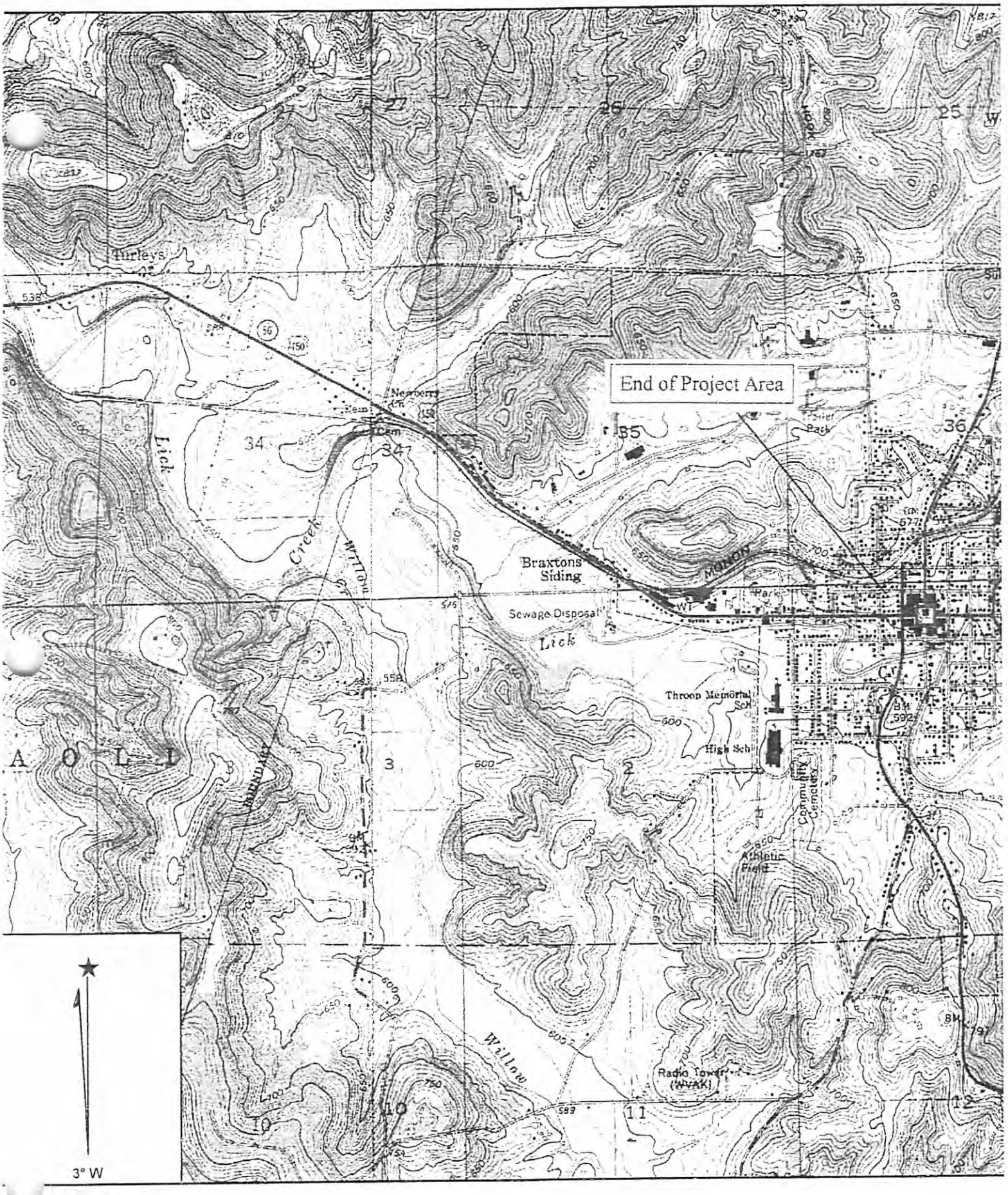

Name: PAOLI
Date: 11/29/2002
Scale: 1 inch equals 2000 feet

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Archaeological Consultants of the Midwest, Inc.

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Indianapolis, Indiana 46239
Phone: (317) 862-2002 • Fax: (317) 862-2112
Email: Archmidwest@aol.com

December 13, 2002

RECEIVED
DEC 2002
Butler, Fairman & Seufert, Inc.

Indiana Department of Natural Resources
Division of Historic Preservation and Archaeology
402 West Washington Street
Room W274
Indianapolis, Indiana 46204
Attn: James Mohow

Dear Mr. Mohow,

Enclosed are the completed site forms for sites 12Or738 to 12Or750. These sites were discovered during the Phase Ia survey of the proposed rehabilitation of U.S. Highway 150/State Road 56 between Prospect and Paoli, Indiana. The project was undertaken for Butler, Fairman and Seufert.

Also, during a review of *A Phase Ia Archaeological Reconnaissance Survey for the Proposed Rehabilitation of United States Highway 150/Indiana State Road 56, French Lick and Paoli Townships, Orange County, Indiana* (Jackson 2002), it was observed that on page 3 of Figure 5 sites 12Or744 to 12Or747 had been incorrectly labeled. Enclosed is a corrected page 3 of Figure 5.

If you have any questions or comments concerning the enclosed site forms, as well as the corrected Figure 5, please contact me at 862-2002.

Sincerely,

Christopher Jackson

Christopher Jackson

cc: David Bourff, Butler, Fairman and Seufert

METHODS

Field Methods

Methods utilized by Archaeological Consultants of the Midwest during this investigation consisted of pedestrian survey, shovel probing, soil coring, and visual inspection. The following is a brief description of each method.

Pedestrian Survey: This method was utilized in those areas where the ground surface had at least 30 percent visibility and consisted of visually examining the ground surface at a maximum of 10-m intervals. Once cultural materials were discovered, then the site area was visually examined at 1-m intervals. All artifacts were flagged and then piece plotted to a temporary datum. Artifacts were collected by their piece plot number.

Shovel probing: This method was utilized in areas in which ground surface visibility was less than 30 percent and consisted of excavating 30 cm in diameter shovel test pits at 10-m intervals. The units were excavated until subsoil was encountered, or to a depth of 50 cm, whichever came first. The fill from these shovel test pits was sorted carefully then by hand and/or trowel. All artifacts encountered in these shovel test pits were collected and provenienced to the shovel test pit and in relation to the A-horizon. A record was kept for all shovel test pits excavated. This record includes soil profile, soil texture, soil color (Munsell), and the presence/absence of cultural materials.

Soil coring: This method was utilized in pedestrian surveyed areas that are situated on a floodplain and on the floodplain next to a drainage. The purpose of this method is to determine the depth of alluvial deposition and the potential for subsurface in situ cultural horizons to be present. Each core was taken down to a minimum of 50 cm. The soil stratigraphy--soil type, depth of soil horizons, and soil color (Munsell)—was recorded for each soil core. The soil cores were taken with an Oakfield soil core.

Visual Inspection: All low probability areas (i.e., ravines, steep slopes, etc.) were visually inspected. This consisted of a walkover of the project area. The intention of this was to locate visibly disturbed areas, slope benches, historic sites, dumping deposits, etc

Field notes and map notations were employed to record area designations, field conditions, sites, and methods of investigation. Similar notes were taken for each site and included observations, methods of investigation, and site size.

All field notes and artifacts will be curated temporarily at Archaeological Consultants of the Midwest until this report has been accepted by DHPA. Eventually the field notes and artifacts will be permanently curated at the Indiana State Museum. Accession numbers have been requested from the Indiana State Museum; however, at the time of the report, these numbers had not been received.

Laboratory Methods

This section describes the system employed to analyze and interpret the artifacts recovered during field reconnaissance. Artifacts were cleaned and analyzed by David Blanton and Christopher Jackson.

Prehistoric Materials

Prehistoric cultural remains were sorted initially by material. Within each material group, artifacts were sorted further by the specific attributes of the different elements of the material groups (e.g., chert type, temper, etc.). The final level of analysis of prehistoric artifacts separated them into generally recognized descriptive categories. These descriptive categories are specific to each material group, but generally indicate use, manufacture technique, or aesthetic qualities. The material groups and descriptive categories that were utilized to analyze the prehistoric material recovered during reconnaissance are described below.

Lithic Artifact Analysis

All prehistoric materials recovered during the reconnaissance survey were lithic in nature. After first sorting the lithics by material type (e.g., chert, metamorphic stone, etc.), they were sorted further by the specific attributes of the different elements of the material types (e.g., chert type, sandstone, etc.). In the final level of analysis, the lithics were separated into generally recognized descriptive categories like primary flake, FCR, etc.

Two broad categories of lithic artifacts were identified: (1) formal tools and (2) debitage (flakes, broken flakes, and shatter). The entire assemblage was counted and examined for the presence of tools; these were then separated for later analysis. Tools were given particular analytical attention because these are the most culturally diagnostic and temporally sensitive lithic artifacts recovered.

The lithic tool assemblage was divided into tool types based on apparent function as derived from the morphology of the artifact. Two criteria were used to assign tools to specific diagnostic types: (1) descriptive attributes and (2) metric measurements. These criteria were compared to tool types as identified in established standard references (Converse 1973; Justice 1987). Metric measurements for maximum length, width, thickness, and weight were taken for each tool. These attributes were then compared to the metric attributes of specific types from the published data. All chipped stone tools assigned a specific type name or assigned to a cultural period were found to compare favorably with the published metric ranges (Converse 1973; Justice 1987).

The debitage from each specimen bag was classified by type (i.e., flakes, flake fragments, and shatter). Flakes and flake fragments (where feasible) were categorized as to their relative position along the reduction trajectory by further describing each as either a primary, secondary, or tertiary flake or flake fragment. This determination was based on a set of definitions adapted from standard archaeological literature (Vickery and Lambert 1977). Primary flakes are produced during the early stages of reduction (decortication and early shaping of the blank or

preform); secondary flakes are produced during the middle stages of production (thinning and shaping the preform). Tertiary flakes, resulting from the sharpening and/or strengthening of tool edges, are produced during the final stage of tool manufacture or during an episode of tool rejuvenation.

The following lithic categories were recovered during the investigation, and are defined below. The description of the lithic categories is based on Ericksen et al. (1999).

Biface/biface fragment: A lithic artifact, with two faces, which has been reduced in mass through the removal of flakes from both faces in a manner consistent with producing an intentionally thinned edge or form. This term is restricted to complete artifacts that cannot otherwise be classified as a more specific type of formal tool. Biface fragments are artifacts that would otherwise be classified as bifaces but whose morphology is consistent with breakage or damage resulting in an incomplete or fragmentary appearance. This breakage may occur during or after manufacture and may result from cultural or noncultural factors.

Checked cobble: A nodule/chunk of bedded chert in which a flake, or flakes, have been removed with the intention of checking the nodule/chunk of bedded chert for its knapping potential. Unlike a core, the flakes have not been removed in a regular, consistent, and relatively uniform manner.

Core/core fragment: A nucleus from which flakes have been detached in a regular, consistent, and relatively uniform manner and whose morphology is consistent with producing flakes of suitable size, morphology, and type usable for flake tools. The term is restricted to artifacts that do not appear to be undergoing reduction into formal tools. Core fragments are artifacts that would otherwise be classified as cores, however, the morphology is consistent with breakage or damage resulting in an incomplete or fragmentary appearance. This breakage may occur during or after manufacture of flake tools and may result from cultural or noncultural factors.

Flake: A piece of chert removed from a larger mass through the application of directed force that exhibits the following characteristics: (1) a bulb of percussion resulting from the application of directed force; (2) a striking platform to which the directed force was applied; (3) a body, distal to the striking platform and bulb of percussion, resulting from the conchoidal fracturing produced by the directed force; and (4) taper resulting from the conchoidal fracturing produced by the directed force. Whole flakes are flakes that exhibit all four characteristics. Flake fragments are flakes that lack one or more of these characteristics. The flakes recovered during the reconnaissance were assigned to the following sub-categories:

Primary flake: These are flakes removed during the early stage of manufacturing in an attempt to reduce the mass of a raw nucleiform into a workable preform or a usable core. These flakes are typically large to medium in size and relatively thick and triangular in cross-section, frequently display scars from previously detached flakes over the entire dorsal face, have a high degree of cortex, and often

display a pronounced bulb of percussion. Primary flake fragments are flake fragments that retain sufficient traits (almost always including the bulb of percussion and the majority of the tapering body) to be assigned to the early stage of the reduction sequence with some degree of confidence.

Secondary flake: These are flakes removed during the middle stage of manufacturing in an attempt to further shape the preform into a nearly finished tool. These flakes are typically medium to small in size, not thickened or triangular in cross-section, generally retain the flake scars from previously detached flakes over the entire dorsal face, and frequently lack a pronounced bulb of percussion. Secondary flake fragments are flake fragments that retain sufficient traits (almost always including the bulb of percussion and the majority of the tapering body) to be assigned to the middle stage of the reduction sequence with some degree of confidence.

Tertiary flake: These are flakes removed during the final stage of manufacturing in order to sharpen or rejuvenate tool edges. These flakes are small to very small, thin, lack retained flake scars, and usually have a small bulb of percussion that is difficult to discern. Tertiary flake fragments are flake fragments that retain sufficient traits (almost always including the bulb of percussion and the majority of the tapering body) to be assigned to the late stage of the reduction sequence with some degree of confidence

Indeterminate flake: These are flake fragments whose position along the reduction trajectory cannot be ascertained with any reasonable degree of confidence. This difficultly in assignment may be due to any number of factors, but is often due to the truncated morphology of flake fragments. In some cases the difficultly arises from an inability to distinguish between equally plausible assignments given the gradation of categories imposed on the reduction trajectory. The distinction between small primary flakes and large secondary flakes, or small secondary flakes and (relatively) large tertiary flakes is sometimes problematic even when whole flakes are considered. Indeterminate flake fragments usually lack a bulb of percussion and/or significant portions of the body of the flake.

Modified flake/shatter/checked cobble: A flake, piece of shatter, or a checked cobble that exhibits alteration due to any type of intentional trimming (unifacial, bifacial, flat, steep, regular, or alternate) restricted to the edges of the artifact or that exhibits macroscopic evidence of utilization (such as a pattern of small flake scars, polish, damage, or edge dulling). This term is restricted to flakes/piece of shatter/checked cobble that possess morphology reasonably consistent with use as a tool despite not having been shaped or otherwise altered.

Projectile point/projectile point fragment: A biface that has modifications to its proximal end in order to make it suitable for hafting and a pointed tip at its distal end. Small, relatively thin, trianguloid bifaces that appear suitable for attachment to an arrow shaft, but do not contain a hafting element, are also subsumed under this definition based upon

their apparent function. This term is restricted to complete artifacts that may not otherwise be classified as a more specific type of formal tool; this restriction does not exclude assignment of specific diagnostic cultural/temporal type names or affiliations (e.g., Thebes E-Notched points, Brewerton points, or Early Woodland projectile points). Projectile point fragments are artifacts that would otherwise be classified as projectile points; however, the morphology is consistent with breakage or damage that results in an incomplete or fragmentary appearance. This breakage may occur during or after manufacture and may result from cultural or noncultural factors.

Shatter: Blocky, angular to sub-angular pieces of chert debitage that cannot otherwise be classified as flakes, broken flakes, cores, or core fragments. This term is generally restricted to pieces of debitage with little or no morphological regularity.

Material Type

Identification of material type is restricted to an inspection and classification through comparison of the visual properties of each piece. The following morphological variables are evaluated: color, fossiliferous and mineral inclusions, and luster. Source distinctions are restricted to major types that were found to dominate the assemblages. For the convenience of the reader, the text defining morphological characteristics and known regional distributions is included in this section. While the terms flint and chert are somewhat nebulous and scientifically unsatisfactory, neither having a distinct or exact definition, they are in common use. Flint is very fine grained to glass-like, often partially translucent, usually fairly pure with few inclusions, and flakes easily with clean breaks. Chert is grainier, with the poorer quality materials approaching the consistency of limestone. They are always opaque and harder to work to a sharp clean edge. The identification of material types is based on gross morphological attributes. The imprecise distinction between flint and chert is as scientifically accurate as this identification and sufficiently informative to justify its use.

Fossiliferous chert: This chert type subsumes several similar chert types that are identified in the archaeological literature (Haney chert, Allens Creek chert, Harrodsburg chert, and varieties of Muldraugh chert), which are macroscopically similar and have ranges of variation that at times makes them difficult to distinguish from one another. Given the difficulty researchers can have in distinguishing the separate types macroscopically, it seems reasonable to conclude that prehistoric inhabitants utilizing these resources did not distinguish between the various types based upon macroscopically apparent attributes. Selection would seem to have been made based on other criteria.

The common attributes found among these chert types are the basis for defining a distinct fossiliferous chert type. All are highly fossiliferous but the specific type, size, and density of the fossils vary, and all are relatively coarse grained, generally opaque, and have a dull luster. Color range is highly variable, from a white and grayish white to shades of blue and bluish-gray, grays, and tans.

Indeterminate chert: This type designates chert artifacts that could not be assigned to a specific chert type. Generally, this designation indicates one of the following scenarios:

(1) characteristics of the material do not appear to fall within any recognizable type; (2) morphology with regard to artifact completeness or size renders assignation impractical; (3) useful diagnostic markers are obscured by a high degree of cortex presence or heat alteration; and (4) despite the presence of useful markers, the ability to differentiate a specific chert type from alternative choices is not possible with any degree of confidence.

Lost River chert: Outcrops of this chert, which have been documented in Monroe, Owen, Putnam, and Orange counties, are found in the Saint Genevieve limestone of the Blue River group, Mississippian system (Shaver et al. 1986).

The chert is mottled and variegated with the color ranging from a light gray to a light bluish gray (Cantin n.d.). Fossils are a common inclusion in the chert. The texture ranges is usually coarse, and the material has a dull luster. Knapping ability of the Lost River chert is extremely poor.

Kentucky St. Louis chert: Artifacts from site 12Or740 were shown to Mark Cantin, archaeologist at Indiana State University Anthropology Laboratory and an authority on Indiana cherts, who stated that the lithic material appeared to be a chert type known as Kentucky St. Louis chert (St. Louis) [personal communication, November 27, 2002].

Outcrops of St. Louis chert have been documented in northeastern and east-central Kentucky and are found in the St. Louis limestone, Pennington formation, Mississippian system. There are two varieties of this type of chert. Both varieties are found in either thin beds or small nodules. In color, Variety I is a grayish-green to yellow-gray with a yellowish-red band near the cortex, while Variety II is a medium gray. The texture of both varieties is very fine-grained and dense.

Wyandotte chert: Wyandotte chert, also referred to as Harrison County chert, is found in both nodular and bedded forms. The source for this flint is in Harrison and Crawford counties, Indiana, plus Meade, Breckenridge, and Hardin counties, Kentucky (Tankersley 1989). The chert outcrops in the Fredonia member of the Ste. Genevieve limestone formation, Blue River group, Valmeyeran series, Mississippian system (Bassett and Powell 1984). This is a very high-quality flint, usually glossy, a medium to dark blue-gray in color with concentric or parallel banding (Munson and Munson 1984; Tankersley 1989).

Heat Altered: While this is not a material type, some artifacts appeared to have been heat altered. This was determined due to changes brought about through heating (i.e., color, luster, etc.), or showing signs of being heated or burned (e.g., pot lids; blackening; a white, chalky patina; crazing).

Historic Materials

The analysis of historic artifacts was organized first to provide a temporal association of sites and then the site types. In general, cartographic information and temporally diagnostic

artifacts were utilized to determine the general date range for sites. Site types were determined by the presence/absence of building remnants and/or features, or a grouping of historic artifacts.

Historic artifacts were sorted using a functional scheme that Ball (1984) adapted from South (1977). Within this hierarchical scheme artifacts are placed into groups that reflect their general function. The following functional artifact groups were used:

> *Architectural Group:* Consists of artifacts directly related to the built, social environment. Its constituents are window glass, nails, bricks, roofing materials, and metal hardware.
>
> *Kitchen Group:* Composed of those artifacts associated with food storage, preparation, and consumption. Its constituents are ceramics, bottle glass, canning jars, food remains, kitchen utensils, pots and pans, and tableware.

If possible, a determination of each historic site's *terminus post quem*, which is determined by the most recent object collected from the site, will be undertaken. However, it should be noted that this principle works best when "applied to discrete deposits that occurred in a single brief filling episode" (Deetz 1993:69). Since a majority of the historic artifacts collected are still currently manufactured, only those artifacts that are no longer produced will determine the *terminus post quem* of a site. Those types of artifacts have a terminal date of production, thereby making it easier to determine when the site was occupied and the *terminus post quem* for the site.

RESULTS OF FIELD RECONNAISSANCE

A total of 31 survey areas were examined during the reconnaissance survey. These were broken down in 15 pedestrian surveyed areas (designated PS-1 to PS-15) and 17 shovel probed areas (designated SP-1 to SP-17) [Figure 3]. The following is a brief description of each area, beginning with the pedestrian surveyed areas, followed by the shovel probed areas. The description consists of ground cover, visibility, topography, and the presence/absence of archaeological sites.

Pedestrian Surveyed Areas

As noted, a total of 15 pedestrian surveyed areas were examined. The following is a description of these pedestrian surveyed areas, beginning with PS-1.

> PS-1: This area is located at the western end of the project area (Figure 3). The survey area is situated in an agricultural field with a ground cover of harvested corn debris. Visibility ranged from 30 to 40 percent. Due to the moderate visibility, the area was pedestrian surveyed. The terrain consisted of a floodplain. No sites were documented.

Figure 3: Aerial maps of the project area showing the location of the survey areas.

Since the area is situated on a floodplain, six soil cores were excavated to determine the potential for buried in situ cultural horizons. Several different profiles were documented in PS-1; each began with a brown (10YR4/3) clay loam that was followed by a pale brown (10YR6/3) clay with mottles (n=1 core), a light gray (10YR7/2) clay with slight mottling (n=1 core), a light yellow brown (10YR6/4) clay with reddish and gray mottles (n=3 cores), and a yellow brown (10YR5/4) clay with reddish mottles (n=1 core). A second stratum was not encountered in one of the cores, which was located approximately 350 m east from the western boundary of the survey area. In the remaining seven soil cores, the brown clay loam horizon ranged in depth from 14 cm to 35 cm, with an average depth of 22 cm. No subsurface in situ cultural horizons were encountered in the soil cores.

Because all but one of the soil cores encountered a second horizon, all of which lacked evidence of in situ subsurface cultural deposits, a Phase Ic investigation is not recommended for this survey area.

PS-2: This area is located near the western terminus of the project area and east of PS-1 (Figure 3). PS-2 is situated in an agricultural field with a ground cover of harvested corn debris. Visibility was between 30 and 50 percent. Due to the moderate visibility, the area was pedestrian surveyed. No sites were documented. The terrain of PS-2 consisted of a level floodplain.

Because the area consists of a level floodplain, eight soil cores were excavated. The soil profiles observed in these soil cores consisted of a dark yellowish brown (10YR4/3) clay loam followed in turn by a light yellow brown (10YR6/4) clay (n=2 cores), a yellow brown (10YR5/4) clay with reddish mottles (n=3 cores), or a light brownish gray (10YR6/2) clay (n=3 cores). One of the soil cores failed to encounter a second horizon, but rather the core encountered water. No subsurface in situ cultural horizons were encountered in the soil cores.

Since all but one of the soil cores encountered a second horizon, all of which lacked evidence of in situ subsurface cultural deposits, a Phase Ic investigation is not recommended for PS-2.

PS-3: This area is located in the western terminus of the project area, and south of PS-2 (Figure 3). Vegetation consisted of a harvested cornfield with 30 to 50 percent visibility. As a result of the moderate visibility, the survey area was pedestrian surveyed. No sites were documented. The terrain consisted of a level floodplain.

Since the area was a level floodplain, four soil cores were excavated. In three of the soil cores, a B-horizon was not encountered. The only horizon encountered was a dark yellow brown (10YR4/4) silt clay loam. All three cores were excavated to a depth of 50 cm.

A stratified profile was observed in the fourth soil core, which was located at the northeastern edge of the survey area and near a dry creek bed. The profile of this soil

core consisted of a brown (10YR4/3) silt clay loam that was 17 cm thick. This was followed by a yellow brown (10YR5/4) clay that was also 17 cm thick. The next stratum encountered was a yellow brown (10YR5/4) clay with reddish mottles; this stratum was 21 cm thick. The last stratum encountered was a yellow brown (10YR5/4) clay with manganese observed in the stratum. This last stratum was encountered at 65 cm below the ground surface. Excavation of the soil core ceased with this last stratum.

No subsurface in situ cultural horizons were encountered in the soil cores.

However, since the three southwestern soil cores failed to encounter a second horizon, a Phase Ic investigation is recommended for this section of PS-3 prior to any construction activities.

PS-4: This survey area is located at the western terminus of the project area, west of PS-3 and south of PS-1 (Figure 3). The ground cover in PS-4 consisted of standing soybeans and burrs and weeds that were approximately 1.0 to 1.5 m in height. Visibility ranged from 70 to 80 percent. Due to the excellent visibility, the survey area was pedestrian surveyed. No sites were documented; however, one piece of plain whiteware was observed in the survey area. The area around the whiteware sherd was visually examined at 1-m intervals, but no additional artifacts were observed. As a result of this, it was determined that the sherd represented a casual discard and no site number was assigned to the sherd. The topography consisted of a series of rises on the floodplain.

Because the area is situated in a floodplain, three soil cores were excavated. The soil profile for all three cores consisted of a dark yellow brown (10YR4/4) silt clay loam followed by a brown (10YR5/3) clay with a small amount of mottling. The depth of the dark yellow brown silt clay loam horizon ranged from 32 cm to 35 cm, with an average depth of 34 cm. No subsurface in situ cultural horizons were encountered in the soil cores.

Since a second horizon was encountered which contained no evidence of in situ subsurface cultural remains, a Phase Ic investigation is not recommended for PS-4.

PS-5: This survey area is located just east of the intersection of US 150/SR56 and County Road 725 West (Figure 3). The ground cover consisted of harvested corn debris, with visibility ranging between 30 and 40 percent. Due to the moderate visibility, the survey area was pedestrian surveyed. No sites were documented in the agricultural field; however, one site (12Or738) was documented on an artificial rise that was located just west of the agricultural field and north of the intersection (Figure 3). The site is discussed in more detail in the Site Description section of this report. The topography of the agricultural field consisted of a fairly level floodplain.

Due to the topography of the agricultural field, five soil cores were excavated. For two of the soil cores, which were located at the western end of the survey area, the soil profile consisted of a dark yellow brown (10YR4/4) silt clay loam followed by a yellow brown (10YR5/4) clay. The depth of the dark yellow brown silt clay loam horizon was 25 cm

and 27 cm. No subsurface in situ cultural horizons were encountered in these two soil cores.

In the three remaining soil cores, a second horizon was not encountered. All three soil cores were excavated to a depth of 50 cm, with the profile consisting of a dark yellow brown (10YR4/4) silt clay loam. No subsurface in situ cultural horizons were encountered.

Since the eastern three cores failed to encounter a second horizon, it is recommended that a Phase Ic investigation should be conducted in this section of PS-5 prior to any construction activities. It is also recommended that a Phase Ic investigation is not warranted in the western section of the PS-5 due to the fact that a second stratum was encountered in those soil cores which contained no evidence of a buried cultural horizon.

PS-6: This survey area is located east-southeast from PS-5 (Figure 3). The ground cover in PS-6 consisted of a harvested cornfield with visibility ranging between 30 to50 percent. Due to the moderate visibility, the area was pedestrian surveyed. No sites were inventoried in PS-6. The terrain consisted of a fairly level floodplain.

Due to the terrain, soil cores (n=15) were excavated. In 13 of the 15 soil cores, a second horizon was not encountered. The soil profile observed in these 13 soil cores consisted of a dark yellow brown (10YR4/4) silt clay loam, which became more clay-like the deeper the core was excavated. No subsurface in situ cultural horizons were encountered in the soil cores.

The soil profile observed in two of the shovel probes, which were located approximately 400 and 450 m east from the western edge of the survey area, consisted of a dark yellow brown (10YR4/4) silt clay loam followed by a yellow brown (10YR5/6) silt clay. The depth of the dark yellow brown silt clay loam horizon was 40 cm and 41 cm. No subsurface in situ cultural horizons were encountered in the soil cores.

While a second stratum was encountered in two of the soil cores, the fact that a second stratum was not encountered in 13 of the soil cores indicates that there is the potential for buried cultural horizons. As a result of this potential, it is recommended that a Phase Ic investigation should be undertaken in this survey area prior to any construction activities.

PS-7: This area was located south of PS-6 (Figure 3). The ground cover for PS-7 consisted of harvested corn debris. Visibility was approximately 30 percent. Due to the moderate visibility, the survey area was pedestrian surveyed. During the pedestrian survey of PS-7, limestone gravel chunks were observed in the eastern and western ends of the survey area. The size of the chunks indicated that they were not used for agricultural purposes. It is likely that these two areas consist of gravel piles that were utilized for road construction and/or repair. During the pedestrian survey, a flake was encountered in one of the gravel areas and designated as site 12Or739. The site is discussed in more detail in the Site Description section of this report. The terrain consisted of a fairly level floodplain.

Due to the terrain, five soil cores were excavated. The soil profile in three of the cores consisted of a dark yellow brown (10YR4/4) sandy clay. These three cores were excavated to a depth of 50 cm without encountering a second stratum. No subsurface in situ cultural horizons were encountered in the soil cores.

One of the soil cores was excavated in one of the gravel areas. Excavation of the soil core was terminated at 15 cm because gravel was encountered at this depth and the core could not proceed. The soil profile consisted of a dark yellow brown (10YR4/4) clay loam. No subsurface in situ cultural horizons were encountered in the soil core.

The last core, excavated at the eastern end of the survey area, consisted of a yellow brown (10YR5/6) sandy clay. This core also was excavated to a depth of 50 cm without encountering a second stratum. No subsurface in situ cultural horizons were encountered in the soil core.

Because a second stratum was not encountered in the soil cores, there is the potential for buried in situ cultural horizons. As a result of this potential, it is recommended that a Phase Ic investigation should be undertaken prior to any construction activities.

PS-8: This survey area is situated in the west-central section of the project area (Figure 3). Vegetation consisted of harvested soybean debris. Visibility was between 30 and 50 percent. Due to the moderate visibility, the survey area was pedestrian surveyed. No sites were documented. The terrain consisted of a fairly level floodplain.

As a result of the terrain, five soil cores were excavated. It should be noted that none of the soil cores were excavated to a depth of 50 cm. This was due to the fragipan, which was extremely hard and stopped the soil cores from further excavation. The furthest depth reached was 42 cm. The soil profile encountered in these soil cores consisted of a dark yellow brown (10YR4/4) clay loam. No subsurface in situ cultural horizons were encountered in the soil cores.

While none of the soil cores were excavated to a depth of 50 cm, it appears highly likely that a second stratum would not have been encountered within 50 cm. This conclusion is based on the observation that the first stratum reached a depth of 42 cm in the deepest core. As a result of this, there is the potential for buried in situ cultural horizons. A Phase Ic investigation should be undertaken prior to any construction activities.

PS-9: This survey area is located southeast of PS-8 (Figure 3). The vegetation in PS-9 consisted of harvested corn debris, with visibility ranging between 30 to 40 percent. Due to the moderate visibility, the survey area was pedestrian surveyed. No sites were documented. The topography consisted of a fairly level floodplain.

Due to the topography, three soil cores were excavated. The soil profiles in all three cores consisted of a dark yellow brown (10YR4/4) clay loam that gradually gradates into a yellow brown (10YR5/6) clay loam. The gradation in the first two cores, which were

located in the northwestern section of the survey area, was first encountered at 13 cm and 14 cm. The gradation occurred in the third core at 35 cm. No subsurface in situ cultural horizons were encountered in the soil cores.

Due to the gradation encountered in these three soil cores, it is believed that the potential for buried cultural horizons is minimal. As a result of this, it is recommended that a Phase Ic investigation of PS-9 is not warranted.

PS-10: This survey area is situated north-northwest of PS-9 (Figure 3). The ground cover consisted of harvested corn debris with visibility ranging between 30 and 40 percent. Due to the moderate visibility, PS-10 was pedestrian surveyed. No sites were inventoried. The terrain consisted of a fairly level floodplain, which was the same landform as PS-9. However, based on the results from the soil coring of PS-9, which indicated that a Phase Ic investigation was not warranted, it was decided not to excavate any soil cores in PS-10.

PS-11: This survey area is located roughly in the center of the project area (Figure 3). The vegetation consisted of harvested soybean debris with visibility ranging from 30 to 40 percent. As a result of the moderate visibility, PS-11 was pedestrian surveyed. No sites were documented. The topography consisted of a small floodplain in the southwestern quarter of the project area, while the remainder of the area consisted of a gradual slope. Due to the small size of the floodplain, it was decided not to excavate any soil cores in the survey area.

PS-12: This survey area is situated northwest of PS-11 (Figure 3). The ground cover consisted of harvested soybeans with 30 to50 percent visibility. Due to the moderate visibility, PS-12 was pedestrian surveyed. No sites were discovered. The terrain consisted of a fairly level floodplain. However, due to landowner concerns, soil cores were not excavated. As a result of this, a recommendation concerning whether a Phase Ic investigation is warranted cannot be determined at this time.

PS-13: This survey area is located north-northeast of PS-12 (Figure 3). The ground cover of PS-13 consisted of harvested soybean debris. Visibility was between 30 to 50 percent. As a result of the moderate visibility, the survey area was pedestrian surveyed. No sites were documented. The topography consisted of a small floodplain area in the southwestern section of the survey area; however, most of the area consisted of a gradual slope to a ridge in the eastern third of the survey area. Due to landowner concerns, soil cores were not excavated in the floodplain section of PS-13. Because of this, a determination of whether a Phase Ic investigation is warranted in the floodplain section of the survey area cannot be determined.

PS-14: This area is located south-southeast of PS-13 (Figure 3). The vegetation consisted of harvested corn debris. Visibility was between 20 and 50 percent. Due to the moderate visibility, PS-14 was pedestrian surveyed. The topography consisted of two ridges with a gradual slope and a swale separating the ridges. One of the ridges was located in the northwestern section of the survey area, while the second ridge was

situated in the eastern section. One site (12Or740) was inventoried in the survey area. The site is discussed in more detail in the Sites Description section of this report.

PS-15: This area is situated in the eastern third of the project area (Figure 3). The ground cover consisted of harvested soybean debris with 30 to 50 percent visibility. Due to the moderate visibility, the area was pedestrian surveyed. No sites were documented. The terrain consisted of a terrace.

Shovel Probed Areas

As previously stated, a total of 17 areas were shovel probed. The following are brief descriptions of these shovel-probed areas, beginning with SP-1.

SP-1: This area is located northeast of PS-2 (Figure 3). The vegetation consisted of mowed weeds and standing weeds that were approximately 1 m in height. Visibility was nonexistent. Due to the lack of visibility, shovel probes were excavated. The topography consisted of a drainage area and bottoms. During the visual inspection, Fiber Optics markers were observed that run parallel to the road and through the survey area.

A total of eight shovel probes were excavated. All were negative and no subsurface in situ cultural horizons were encountered in the shovel probes. No sites were documented in SP-1.

The soil profile observed in those shovel probes excavated in the northeastern section of SP-1 consisted of a dark yellow brown (10YR4/4) clay loam that was followed by a light yellow brown (10YR6/4) clay with manganese inclusions. The depth of the dark yellow brown clay loam ranged between 35 cm and 47 cm, with an average depth of 39 cm.

In those shovel probes located in the southwestern section of the survey area, a second stratum was not encountered. All of those shovel probes were excavated to a minimum depth of 50 cm. The only stratum encountered was a dark yellow brown (10YR4/4) clay loam. Since a B-horizon was not encountered, it is recommended that a Phase Ic investigation is warranted in this section of the survey area.

SP-2: This survey area is located southwest of PS-5 (Figure 3). The terrain consisted of a floodplain, while the ground cover was grass. Visibility was 0 percent. Due to the nonexistent visibility, SP-2 was shovel probed.

Twenty-three shovel probes were excavated; all were negative. All the shovel probes were excavated to a depth of 50 cm, with none of the shovel probes encountering a B-horizon. The soil profile consisted of a dark yellow brown (10YR4/4) clay loam. No subsurface in situ cultural horizons were encountered. Since a B-horizon was not encountered in these shovel probes, a Phase Ic investigation is recommended for this survey area.

SP-3: This survey area is situated south of SP-2 (Figure 3). The topography consisted of a floodplain, while the ground cover consisted of grass with 0 percent visibility. Due to the lack of visibility, SP-3 was shovel probed.

A total of 16 shovel probes were excavated; all were negative. All the shovel probes were excavated to at least a depth of 50 cm without encountering a B-horizon. No subsurface in situ cultural horizons were encountered. The soil profile consisted of a dark yellow brown (10YR4/4) clay loam.

It should be noted that the western half of this floodplain has been previously surveyed (Jackson 1997). Jackson (1997) noted that a B-horizon was not encountered and that a Phase Ic was warranted. Geoarchaeological investigations of this section of the floodplain indicated that there was the potential for buried cultural horizons (Holycross and Stafford 2000). As a result of this, Holycross and Stafford (2000) stated that a Phase Ic investigation needed to be undertaken prior to any construction activities.

Because of this recommendation for the western half of the floodplain, and the data collected from this investigation, it is recommended that a Phase Ic investigation should be undertaken in SP-3 prior to any construction activities.

SP-4: This survey area is located east of PS-5 (Figure 3). The terrain consisted of a floodplain, while the ground cover was a yard with 0 percent visibility. Due to the lack of visibility, SP-4 was shovel probed.

Thirteen shovel probes were excavated; all were negative. All of the shovel probes were excavated to a minimum depth of 50 cm with no B-horizon encountered. The soil profile consisted of a dark yellow brown (10YR4/4) silt clay loam. No subsurface in situ cultural horizons were encountered in the shovel probes.

Since a B-horizon was not encountered in these shovel probes, there is the potential for buried cultural horizons within the survey area. As a result of this potential, it is recommended that a Phase Ic investigation is warranted in SP-4 prior to any construction activities.

SP-5: This survey area is located south and southeast of SP-4 (Figure 3). The topography of SP-5 consisted of an active floodplain with the ground cover consisting of a woodlot. Visibility was 0 percent. As a result of the nonexistent visibility, the area was shovel probed.

A total of eight shovel probes were excavated. It should be noted that the first four shovel probes were excavated at 10-m intervals; however, none of these shovel probes encountered a B-horizon. As a result of this and the observation that the survey area is situated in an active floodplain, it was decided to expand the interval between shovel probes to 30 m, unless a B-horizon was encountered in a shovel probe. In that case, then the intervals would be decreased to 10-m intervals until at least two consecutive shovel

probes failed to encounter a B-horizon. None of the shovel probes encountered a B-horizon. Therefore, the interval between shovel probes was not decreased.

An examination of the soil profiles indicated that it consisted of a dark yellow brown (10YR4/4) silt clay loam. However, approximately 80 m west of the eastern boundary of the survey area, a cinder horizon was encountered just below the dark yellow brown silt clay loam horizon. This cinder horizon, which was encountered between 17 cm and 30 cm below the ground surface, ranged in thickness between 5 cm and 30 cm. The depth of the cinder horizon decreased the further west the shovel probe was located from the eastern end of the survey area. In order to determine if the cinder horizon extended south of the project area, a 50-cm wide section of the bank of Lick Creek was exposed to a depth of 70 cm.

The excavated section of the bank indicated that the cinder level extended across the eastern section of the floodplain. An examination of the soil profile observed in the bank of Lick Creek indicated that it consisted of a dark yellow brown (10YR4/4) silt clay loam that was 30 cm thick (Figure 4). This was followed with a small amount of soil that was a black (10YR2/1) silt loam. This cinder horizon was approximately 23 cm thick. A yellow brown (10YR5/4) silt clay loam horizon was located below the cinder horizon. This yellow brown is interpreted as being alluvial deposition; therefore, a B-horizon was not observed in the bank of Lick Creek.

Based on the data collected from the soil profiles, it cannot be determined why a bed of cinders was situated in the eastern section of the floodplain. It is likely that the cinder horizon represents an old roadbed, or it is possible that this section of the floodplain was a somewhat low area and it was decided to fill in the area with cinders. Whichever is the case, the buried cinder horizon indicates that alluvial deposition is still occurring on the floodplain. Because of this, there is the potential for buried cultural horizons. Due to this potential, a Phase Ic investigation is recommended prior to any construction activities.

From the data collected from this investigation of SP-5, it was determined that a great deal of alluvial deposition has occurred in those sections of the floodplain situated between Lick Creek and US Highway 150/State Road 56. As a result of this, there is the potential for buried cultural horizons in these floodplains. Due to this potential a Phase Ic investigation is recommended between Lick Creek and the road for those sections of the project area in which an active floodplain is situated; therefore, no further work will be undertaken in those sections of the project area.

SP-6: This area is located east of SP-4 and north of SP-5 (Figure 3). The terrain consisted of a ridgetop and steep slope in the eastern half of SP-6, and a floodplain in the western half. The ground cover consisted of woods. Visibility was 0 percent.

Visual inspection of the ridgetop indicated that it has been disturbed. Hummocks of bulldozer piles were observed throughout the landform. As a result of this, no shovel probes were excavated on the ridgetop. A pile of concrete also was observed in the project area. It appears that the concrete was originally a pad that was associated with a

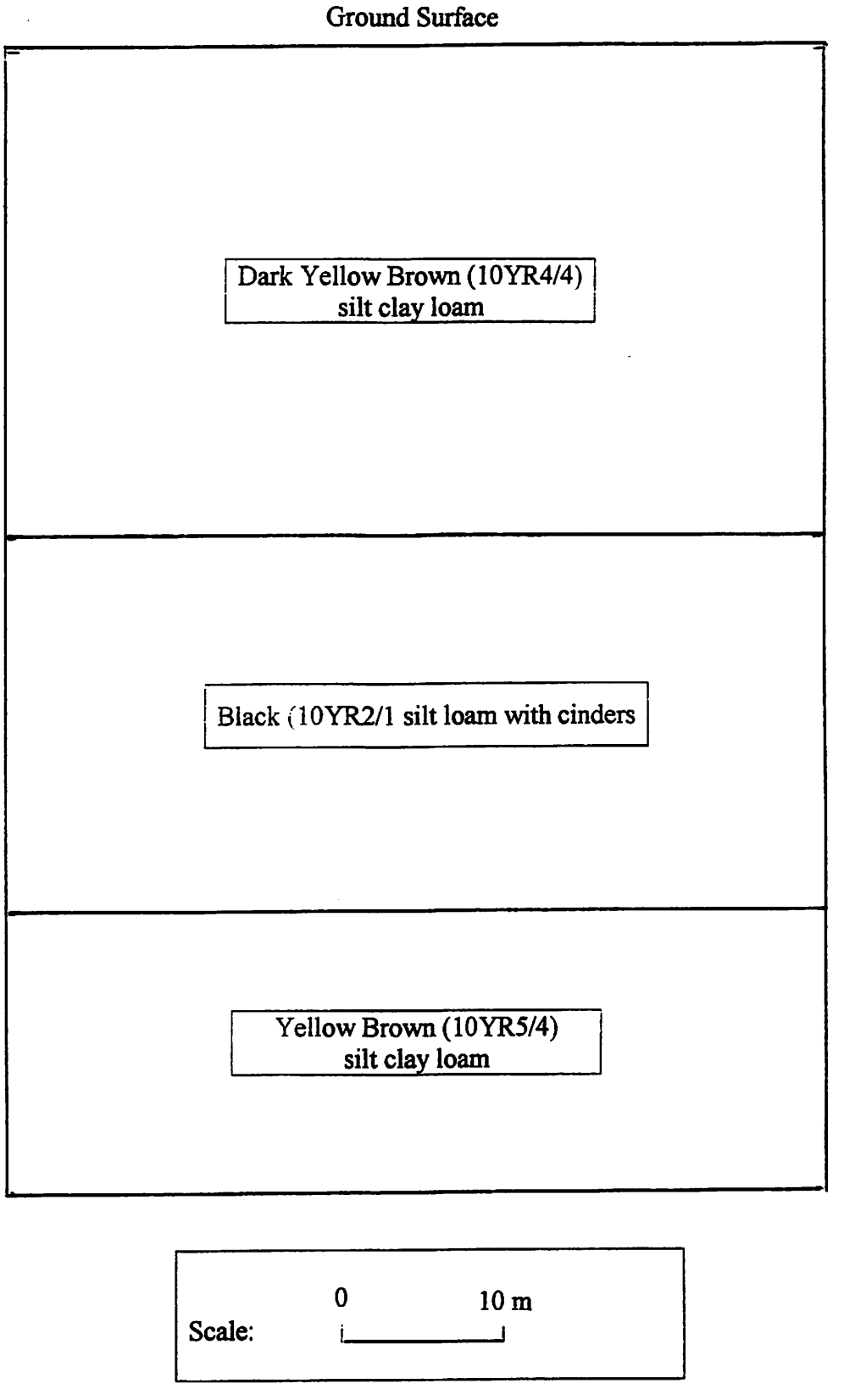


Figure 4: Profile of the excavated section of the bank of Lick Creek.

standing barn and outbuildings. Since these features are located north of the project area, they were not documented. However, if the project area is moved north, or future construction activities will impact the barn and outbuildings, then these features will need to be documented and the area archaeologically investigated.

As a result of the lack of visibility, three shovel probes were excavated in the floodplain section of SP-6; all were negative. The soil profile observed in two of the shovel probes consisted of a dark yellow brown (10YR4/4) silt clay loam. These two shovel probes are located near Lick Creek. The soil profile observed in the shovel probe located approximately 30 m west of the creek encountered a disturbed horizon; however, the cause of the disturbance is unknown. No subsurface in situ cultural horizons were encountered in the three shovel probes.

Since those shovel probes located near the creek failed to encounter a B-horizon, it is believed that there is the potential for buried cultural horizons in this section of SP-6. As a result of this potential, a Phase Ic investigation is recommended prior to any construction activities.

SP-7: This survey area is located southeast of SP-6 (Figure 3). In the western half of SP-7, the terrain consisted of a small floodplain, a bluff overlooking the floodplain, and a gradual slope. In the eastern half, the terrain consisted of a floodplain. Vegetation in the survey area consisted of a woodlot and secondary growth with 0 percent visibility throughout the survey area. Due to the nonexistent visibility, the survey area was shovel probed.

In the western floodplain, three shovel probes were excavated; all were negative. The soil profile observed in these shovel probes consisted of a dark yellow brown (10YR4/4) clay loam followed by a yellow brown (10YR5/4) clay loam, or just a yellow brown (10YR5/4) clay loam. All three of the shovel probes were excavated to a depth of 50 cm. It is believed that the yellow brown clay loam represents alluvial deposition and is not a B-horizon. As a result of this, a B-horizon was not encountered in these shovel probes. As a result of this, there is the potential for buried cultural horizons in this floodplain, and a Phase Ic investigation is recommended prior to any construction activities.

Visual inspection of the ridgetop and slope indicated that the area located within 10 m of the existing road right-of-way has been disturbed. Subsoil was observed on the surface. As a result of this, only one transect of shovel probes was excavated. A total of six shovel probes were excavated on the ridgetop and slope. The first three shovel probes encountered disturbed soils (i.e., gravel with mixed A/B horizons). The soil profile observed in the remaining three shovel probes indicated that the ridgetop has been badly eroded with the depth of the A-horizon ranging between 8 cm and 15 cm. The A-horizon consisted of a dark yellow brown (10YR4/4) clay loam followed by a strong brown (7.5YR4/6) clay. All of the shovel probes were negative, and no subsurface in situ cultural horizons were encountered.

After the first two shovel probes in the eastern floodplain failed to encounter a B-horizon, it was decided to extend the intervals between shovel probes to 20-m. If a B-horizon were encountered in a shovel probe, then the interval would be decreased to 10-m intervals. A B-horizon was not encountered in these shovel probes (n=5). The A-horizon consisted of a dark yellow brown (10YR4/4) clay loam. All of the shovel probes were negative and no subsurface in situ cultural horizons were encountered.

Since a B-horizon was not encountered, there is the potential for buried cultural horizons in the floodplain. As a result, a Phase Ic investigation is recommended on the floodplain prior to any construction activities.

SP-8: This area is located east northeast of PS-8 (Figure 3). The terrain consisted of a ridgetop and slope, while the ground cover consisted of a pasture with 0 percent visibility. Due to the lack of visibility, SP-8 was shovel probed.

Fourteen shovel probes were excavated; all were negative. No subsurface in situ cultural horizons were encountered in the shovel probes. An examination of the soil profiles indicated that two of the shovel probes encountered residual bedrock, while one of the shovel probes encountered a disturbed context (A/B mixture) and one shovel probe did not have an A-horizon. In the remaining shovel probes, the soil profile consisted of a dark yellow brown (10YR4/4) clay loam followed by a strong brown (7.5YR4/6) clay subsoil. The depth of the dark yellow brown clay loam, which encountered a B-horizon or bedrock, ranged between 5 cm and 35 cm, with an average depth of 23 cm. No sites were inventoried in SP-8.

SP-9: This survey area is situated east-southeast of PS-9 (Figure 3). The terrain of SP-9 consisted of two ridgetops (one at the eastern end of the survey area and the second at the western end), gradual slopes, and swales. Vegetation consisted of a pasture with 0 percent visibility. Due to the lack of visibility, the area was shovel probed.

A total of 72 shovel probes were excavated with four of them positive. As a result of the positive shovel probes, 16 radial shovel probes were excavated with three of them positive. The positive shovel probes and radial shovel probes were designated as site 12Or741. The site is discussed in more detail in the Sites Description section of this report.

The soil profile observed on the ridgetop at the western end of the survey area consisted of a dark yellow brown (10YR3/6) clay loam A-horizon, which was followed by a strong brown (7.5YR4/6) clay loam subsoil. In several of the shovel probes, a distinct B-horizon was not encountered. In those shovel probes in which a B-horizon was encountered, the depth of the A-horizon ranged between 20 cm and 49 cm, with an average depth of 37 cm. No subsurface in situ cultural horizons were encountered.

The soil profile observed on those shovel probes situated on the slope and ridgetop at the eastern end of the survey area consisted of a dark yellowish brown (10YR4/4) clay that was followed by either a strong brown (7.5YR4/6) clay or a yellowish red (5YR4/6) clay

subsoil. Slightly more than half of the shovel probes excavated in this section of SP-9 (19/34 or 56 percent) failed to document an A-horizon. This would indicate that this section of SP-9 has been badly eroded. In those shovel probes in which an A-horizon was encountered, the depth of the A-horizon ranged between 14 cm and 48 cm, with an average depth of 30 cm.

SP-10: This survey area is located southeast of SP-9 (Figure 3). The terrain consisted of gradual slopes, a ridgetop, upland flat, and two sinkholes. The ground cover of SP-10 consisted of a fallow field with 0 percent visibility. Due to the lack of visibility, the high potential areas (e.g., ridgetop, gradual slopes, upland flat, and edges of the sinkholes) were shovel probed. Visual inspection of the survey area indicated that three natural gas pipelines and two utility lines traversed the area between the ridgetop and a sinkhole.

A total of 200 shovel probes were excavated, with one shovel probe positive. Thirteen radial shovel probes were excavated with two of them positive. The positive shovel probe and radial shovel probes were designated as site 12Or742, which is discussed in more detail in the Sites Description section of this report. No subsurface in situ cultural horizons were encountered in the shovel probes.

The soil profile observed on the western slope and ridgetop consisted of brown (10YR4/3) silt clay loam A-horizon, which was followed by a yellow brown (10YR5/6) clay loam subsoil. The depth of the A-horizon ranged between 14 cm and 40 cm, with an average depth of 30 cm.

Excavation of two transects of shovel probes across this section of SP-10 between the ridgetop and the eastern sinkhole, which is where the natural gas pipelines and utility lines are situated, indicated a badly eroded/disturbed soil profile. None of the shovel probes located in this section of SP-10 encountered an A-horizon. Therefore, when the remaining transects entered this section of the survey area, excavation of the shovel probes ceased once two consecutive disturbed or completely eroded profiles were encountered.

Excavation of the shovel probes in the region of the sinkhole and east of it showed a typical profile, which was the same as previously noted. The shovel probes excavated just west of the sinkhole indicated that this area was also badly disturbed. The depth of the A-horizon in those shovel probes that showed a normal soil profiled ranged between 10 cm and 50 cm, with an average depth of 25 cm.

SP-11: This survey area is situated south of PS-13 (Figure 3). The terrain of SP-11 consisted of a gradual slope and upland flat. The vegetation of both landforms consisted of pasture, with 0 percent visibility. Due to the lack of visibility, the area was shovel probed. Visual inspection of the gradual slope area of SP-11 indicated that the area located south and southwest of the current road right-of-way has been visibly disturbed. In this area, a steep landscaped slope was observed. As a result of this, only one transect of shovel probes was excavated. The gradual slope area of SP-11 is located northeast of the gravel lane for a barn and house, which are located outside of the project area.

On the upland flat section of SP-11, 20 shovel probes were excavated. All indicated that this area has been disturbed. Visual inspection revealed a drainage pipe in this area, thereby explaining the disturbance encountered in the shovel probes.

In the gradual slope area of SP-11, a total of 66 shovel probes were excavated, with one of them positive. 10 radial shovel probes were excavated, with two of them positive. The positive shovel probe and radial shovel probes were designated as site 12Or743. The site is discussed in more detail in the Sites Description section of this report.

The soil profile observed in the shovel probes excavated in the gradual slope area consisted of a brown (10YR4/3) silt clay loam to clay loam A-horizon that was followed by a yellow brown (10YR5/4) clay loam subsoil. The depth of the A-horizon ranged between 15 cm and over 50 cm, for several of the shovel probes failed to encounter subsoil. However, those shovel probes were not concentrated, but rather scattered throughout the survey area. It is likely that there were depressions along the landform that have been filled in through colluvial deposition. It is believed that there is no potential for buried cultural horizons on this landform. Therefore, a Phase Ic investigation is not warranted along the gradual slope of SP-11. No subsurface in situ cultural horizons were encountered in the shovel probes.

SP-12: This survey area is located northeast of PS-15 (Figure 3). A review of the USGS French Lick quadrangle (7.5' topographic map) indicated that a railroad bed traversed SP-12. Visual inspection identified the railroad bed near the road. As a result of this, only the boundary of the project area was investigated. The topography consisted of an upland flat with a ground cover of a yard with 0 percent visibility. Due to the lack of visibility, this portion of SP-12 was shovel probed.

Ten shovel probes were excavated; all were negative. An examination of the profile of these shovel probes indicated that this area also has been disturbed. No sites were inventoried in SP-12. Also, a subsurface in situ cultural horizon was not encountered in the shovel probes.

SP-13: This area is situated in the eastern quarter of the project area (Figure 3). The topography consisted of two ridgetops, steep slopes, and a large swale/ravine separating the two ridgetops. The ground cover consisted of a fallow field with 0 percent visibility. Due to the nonexistent visibility, the high probability areas (i.e., the ridgetops) were shovel probed.

One of the ridgetops was located at the southwestern end of SP-13, while the other ridgetop was situated at the northeastern end. On the southwestern ridgetop, seven shovel probes were excavated with one of them positive. Five radial shovel probes were excavated with one of them positive. The positive shovel probe and radial shovel probe was designated as site 12Or744. The site is discussed in more detail in the Sites Description section of this report.

The soil profile documented in these shovel probes consisted of a dark yellow brown (10YR4/4) silt clay loam A-horizon, which was followed by a strong brown (7.5YR4/6) silt clay subsoil. The depth of the A-horizon ranged between 16 cm and 40 cm, with an average depth of 25 cm. No subsurface in situ cultural horizons were encountered in these shovel probes.

A total of 12 shovel probes were excavated on the northeastern ridgetop. One of the shovel probes was positive; therefore, two radials were excavated. Radials were not excavated south and east of the positive shovel probe because these two shovel probes would have been located in the present ditches of US Highway 150/State Road 56 and County Road 275 West. Both of the excavated radial shovel probes were negative. The positive shovel probe was designated as site 12Or745, which is discussed in more detail in the Sites Description section of this report.

The soil profile of the 12 shovel probes consisted of a dark yellow brown (10YR4/4) clay loam A-horizon, which was followed by a strong brown (7.5YR4/6) clay subsoil. The depth of the A-horizon ranged between 18 cm and 30 cm, with an average depth of 24 cm. No subsurface in situ cultural horizons were encountered.

SP-14: This survey area is located northeast of SP-13 (Figure 3). The terrain consisted of a ridgetop, gradual slopes, and a wide gradual swale in the northeastern section of SP-14. The ground cover consisted of a fallow field with 0 percent visibility. Due to the lack of visibility, the survey area was shovel probed.

Eighty-five shovel probes were excavated; all were negative. The soil profile observed in these shovel probes consisted of a dark yellow brown (10YR4/4) silt clay loam A-horizon, which was followed by either a yellowish red (5YR5/6) clay, or a yellow brown (10YR5/4) clay loam. An examination of the soil profiles indicated that in the swale area, the B-horizon was not encountered. This may be the result of colluvial deposition; a colluvial fan may be situated in this area. This conclusion was reached through an examination of the topography of the area, which indicated that the swales/ravines north of this area appear to force colluvial deposition to flow toward the wide swale encountered in the project area. It is recommended that a Phase Ic investigation be performed in this section of SP-14. The purpose of the Phase Ic investigation would be to determine the presence/absence of buried cultural horizons, as well as to determine if this area is a colluvial fan. In the soil profiles of those shovel probes that encountered a B-horizon, the depth of the A-horizon ranged between 17 cm and 49 cm, with an average depth of 30 cm. No subsurface in situ cultural horizons were encountered in these shovel probes. No sites were inventoried in SP-14.

SP-15: This survey area is located northeast of SP-14 (Figure 3). The terrain of SP-15 consisted of a gradual slope in a fallow field with 0 percent visibility. Due to the lack of visibility, the survey area was shovel probed.

A total of 12 shovel probes were excavated, with four of them positive. Due to the positive shove probes, 17 radial shovel probes excavated. Five of the radial shovel

probes were positive. The positive shovel probes and radial shovel probes were designated as site 12Or746, which is discussed in more detail in the Sites Description section of this report.

The soil profile observed in these shovel probes consisted of a dark yellow brown (10YR4/4) clay loam A-horizon followed by either a dark yellow brown (10YR4/6) clay or strong brown (7.5YR4/6) clay subsoil. The depth of the A-horizon ranged between 9 cm and 39 cm, with an average depth of 27 cm. Five of the shovel probes/radial shovel probes failed to encounter a B-horizon. These shovel probes were located at the southwestern end of the survey area where a slight depression has been filled in through colluvial deposition. No subsurface in situ cultural horizons were encountered in the shovel probes. It is believed that a Phase Ic investigation is not warranted in this survey area.

SP-16: This survey area is located southeast of SP-13 and SP-14 (Figure 3). The survey area of SP-16 can be split into two parts with a barn area separating the two parts. The ground cover for both areas consisted of a pasture with 0 percent visibility. As a result of the lack of visibility, both parts were shovel probed.

In the eastern part, the topography consisted of a ridgetop, gradual slope, and a small floodplain, which is located at the far eastern end of this part. A total of 81 shovel probes were excavated, with one of them positive. Four radial shovel probes were excavated; all were negative. The artifact collected from the positive shovel probe was a whiteware rim sherd with a flow blue decoration. Since only one historic artifact was collected, it was decided not to designate the positive shovel probe as a site.

The soil profile observed in the shovel probes in the eastern part consisted of a dark yellow brown (10YR4/6) clay loam A-horizon followed by a strong brown (7.5YR4/6) clay to clay loam subsoil. In those shovel probes that encountered subsoil, the depth of the A-horizon ranged between 5 cm and 48 cm, with an average depth of 33 cm. No subsurface in situ cultural horizons were encountered. In the floodplain section, a B-horizon was not encountered. As a result of this, there is the potential for buried cultural horizons. Due to this potential, a Phase Ic investigation is recommended in the floodplain section.

In the western section, the terrain consisted of ridgetops and a gradual slope/saddle. Thirty shovel probes were excavated in this section with one of them positive. A total of 26 radial shovel probes were excavated with six of them positive. The positive shovel probe and radial shovel probes were designated as site 12Or747, which is discussed in more detail in the Sites Description section of this report.

The soil profile observed in the shovel probes excavated in the western section consisted of a dark yellow brown (10YR4/6) clay loam A-horizon, which was followed by a strong brown (7.5YR4/6) clay to clay loam. The depth of the A-horizon ranged from 0 cm (A-horizon has been eroded away) to 48 cm, with an average depth of 24 cm. No subsurface in situ cultural horizons were encountered in these shovel probes.

SP-17: This survey area is located east of SP-15 (Figure 3). The topography of SP-17 consists of a gradual slope and a ridgetop. On the gradual slope, the vegetation consisted of a fallow field, while a woodlot was situated on the ridgetop. Visibility was 0 percent. Due to the nonexistent visibility, the survey area was shovel probed.

However, prior to the shovel probing of the gradual slope, recently excavated shovel probes were encountered. In a discussion with Mark Cantin (archaeologist with Indiana State University), he informed the author that these shovel probes were excavated by Indiana State University during the week of November 11, 2002 (personal communication, November 22, 2002). He stated that a prehistoric site had been documented in this area. Therefore, it was decided that the excavation of the gradual slope would proceed east of the area shovel probed by Indiana State University.

A total of six shovel probes were excavated on the gradual slope; all were negative and no subsurface in situ cultural horizons were encountered. The soil profile consisted of a dark yellow brown (10YR4/6) silt clay loam A-horizon followed by a dark yellow brown (10YR4/4) silt clay subsoil. The depth of the A-horizon ranged from 22 cm to 37 cm, with an average depth of 27 cm.

Visual inspection of the ridgetop documented the remnants of an abandoned farmstead (site 12Or748), which is discussed in more detail in the Sites Description section of this report. Since this was a site, it was decided to excavate the shovel probes at 5-m intervals across the site area that will be impacted by the proposed project.

Twenty-one shovel probes were excavated; three of them were positive and were incorporated with site 12Or748. The soil profile observed in these shovel probes consisted of a dark brown (10YR3/3) silt clay loam with gravel A-horizon that was followed by a dark yellow brown (10YR4/4) clay loam subsoil. The depth of the A-horizon ranged from 10 cm to 33 cm, with an average depth of 27 cm. No subsurface in situ cultural horizons were encountered in these shovel probes.

Visually Inspected Area

All of the project area was visually inspected. From the visual inspection, areas of high probability were determined. The determination of high probability was based on the topography. It was determined that the areas that had the potential for cultural resources included floodplains, ridgetops, gradual slopes, and saddles. Those areas that had a minimal potential for cultural resources were dry creek beds, steep slopes and sheer rock cliffs, as well as visibly disturbed areas (i.e., abandoned railroad beds, abandoned road beds, etc.). Visibly disturbed areas were determined in several ways: subsoil on the surface, bulldozer piles, landscaped yards, and utility/natural gas pipeline right-of-ways. These areas were noted and inspected with the intention of finding areas that did not appear to have been disturbed. If such areas were found, then the non-disturbed areas were shovel probed and incorporated into a shovel probe area.

In a discussion with Aaron Davenport of Butler, Fairman, and Seufert, it was decided that yards of currently occupied homesteads/farmsteads would not be surveyed (personal communication, November 15, 2002). The reason for this is that these areas usually have been landscaped and thus disturbed.

Visual inspection of the project area documented two sites, which were designated as sites 12Or749 and 12Or750. These sites are discussed in more detail in the Sites Description section of the project area.

SITE DESCRIPTIONS

A total of 13 sites (12Or738 to 12Or750) were inventoried during this investigation (Figure 5). These sites consisted of three isolated finds (12Or739, 12Or744, and 12Or745), five lithic scatters (12Or740 to 12Or743, 12Or747), one historic scatter (12Or746), one farmstead (12Or748), one homestead (12Or750), one foundation remnant (12Or749), and one structural remnant (12Or738). The following is a description of the different site types beginning with isolated finds.

Isolated find: a prehistoric site in which only one artifact was documented/collected from a site; since the site consists of one artifact, a site size of 1 m (north-south) by 1 m is designated for this type of site;

Lithic Scatter: a prehistoric site in which at least two lithic artifacts were collected/documented from the site;

Homestead: a historic site that consists of at least a house. Outbuildings (excluding a barn) can be associated with this type of site;

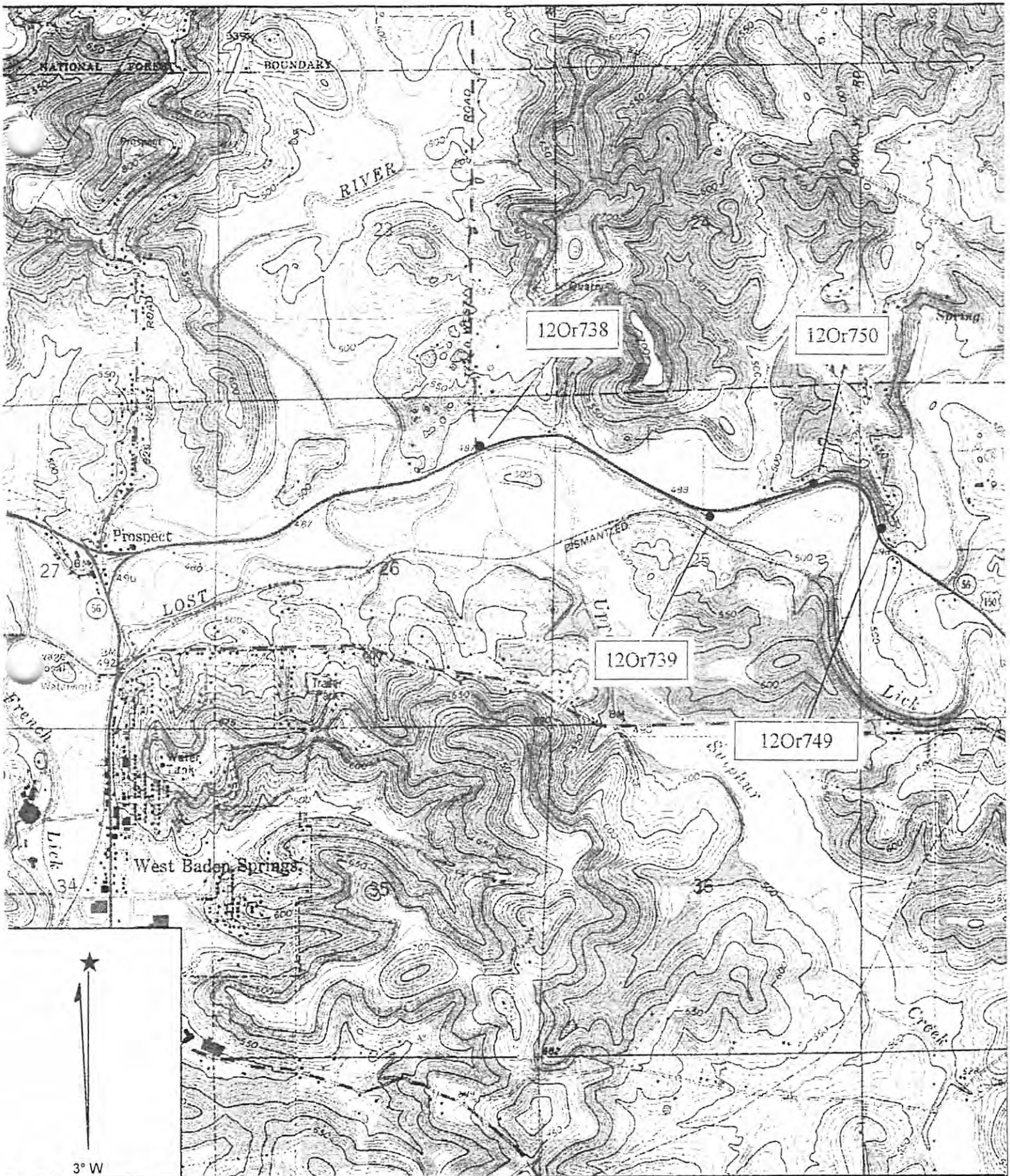
Farmstead: a historic site that consists of a house and a barn; outbuildings are usually, but not always, associated with a farmstead. The difference between a farmstead and a homestead is the presence of a barn. A farmstead has a barn, while a homestead does not (Coleman 1997);

Foundation Remnant: a historic site in which either a foundation, or foundation remnant, was encountered, or a depression is observed that would conform to a building location, but the foundation is not documented on the cartographic sources;

Structural Remnant: a historic site in which either a foundation, or foundation remnant was encountered, and the foundation is documented on a cartographic source; and,

Historic Scatter: a historic site with at least two artifacts and no observable features that is not located in close proximity to a cartographically documented building/structure.

Figure 5: USGS French Lick and Paoli quadrangles (7.5' topographic maps) showing the location of sites 12Or738 to 12Or750.



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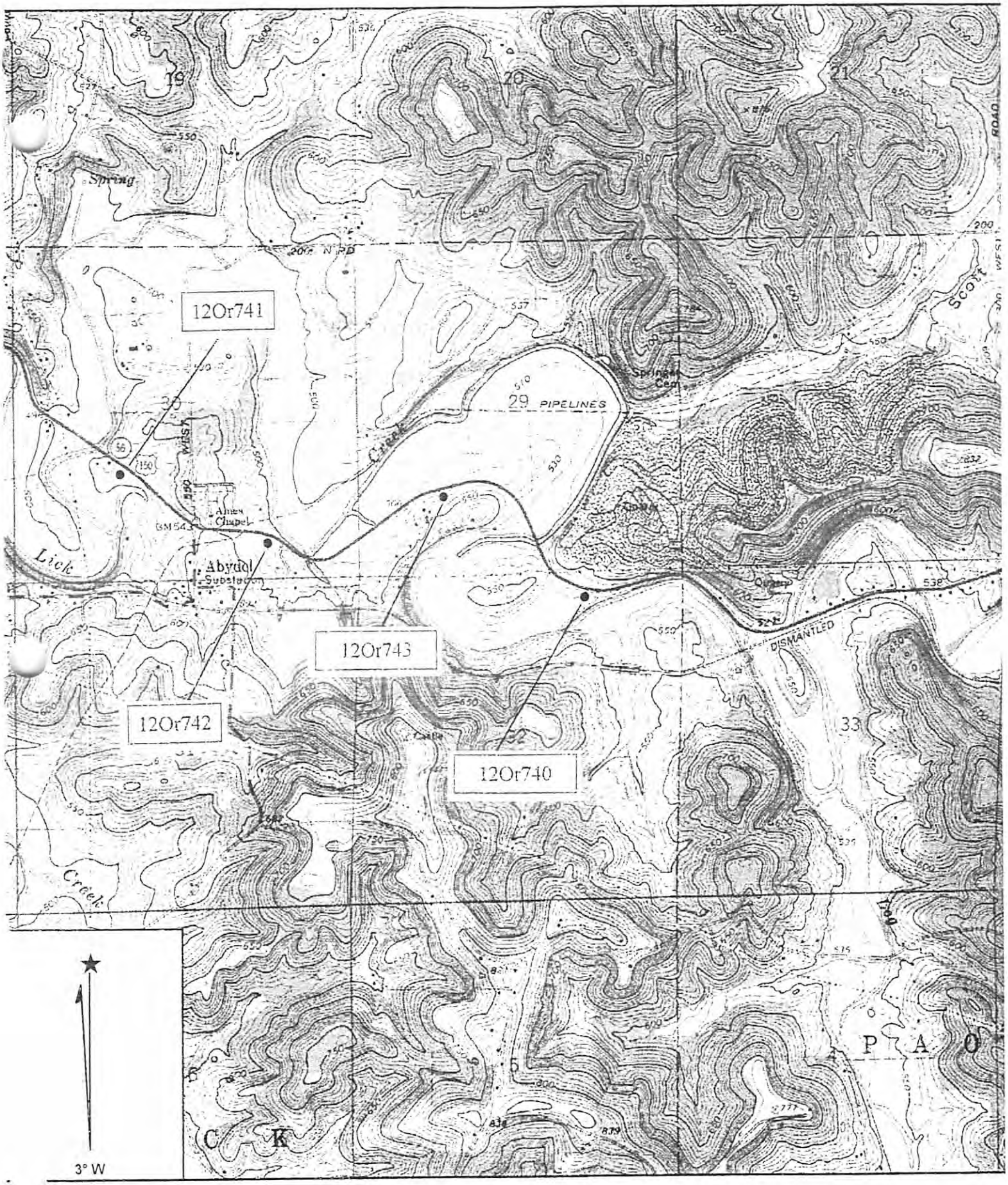

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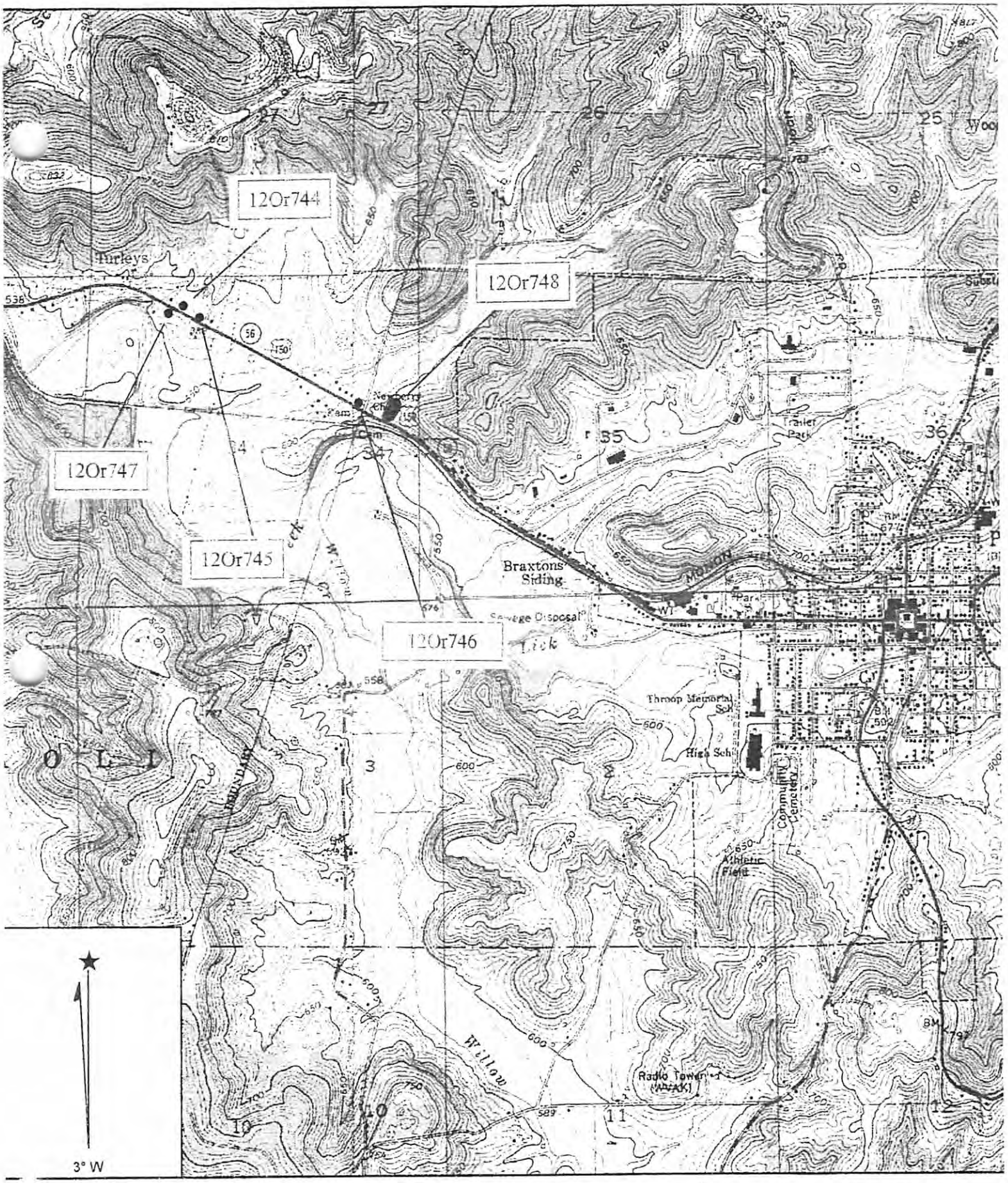

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The following is a brief description of each site, beginning with site 12Or738, and then proceeding in numerical order. These descriptions include method of survey, topography, vegetation, ground surface visibility, site size, artifacts collected/documented from the site, and an evaluation of each site's potential for inclusion on the NRHP.

12Or738

This site was discovered during visual inspection of survey area PS-5 (Figures 3 and 5), when foundation remnants were documented on an artificially raised ridge overlooking a floodplain. An examination of the USGS French Lick quadrangle (7.5' topographic map) documented a building. As a result of this, the site is a structural remnant.

The site's ground cover consisted of grass and gravel with 0 percent visibility. Since the site is situated on an artificial ridge, no shovel probes were excavated on the ridge. Therefore, from the foundation remnants (features), the site size was determined to be 30 m (north-south) by 16 m. A total of five features were documented at site 12Or738. These features consisted of a cement pad, a chimney base, a linear pad, an entrance sign, and an antennae pad (Figure 6). The following is a brief description of each feature beginning with the cement pad.

Cement Pad: This feature is located near the center of the site (Figure 6). The feature consists of a poured cement pad that measures 7 m (north-south) by 5 m (Plate 1). Visual inspection of the pad indicated that there was a slight ramp on the northern side. This would suggest that the feature was utilized for the storing of vehicles.

Chimney base: This feature is located just west of the cement pad (Figure 6). The chimney base measures .5 m (north-south) by .5 m. This feature consists of a small poured cement pad (Plate 2) that is interpreted as being the base of a chimney.

Antennae pad: This feature is situated north-northwest of the cement pad (Figure 6). Visual inspection of the antennae pad indicated that it consisted of a poured cement pad with metal spikes extending from the pad (Plate 3). This feature measures 1 m (north-south) by 1 m.

Linear Pad: This feature is located in the northeastern section of the site (Figure 6). This feature consists of a long linear poured cement pad (Plate 4). The feature measures 2 m (northeast-southwest) by 24.5 m. During the visual inspection of PS-5, numerous golf balls were observed in the field. It is believed that this linear pad feature was used for hitting golf balls for a driving range.

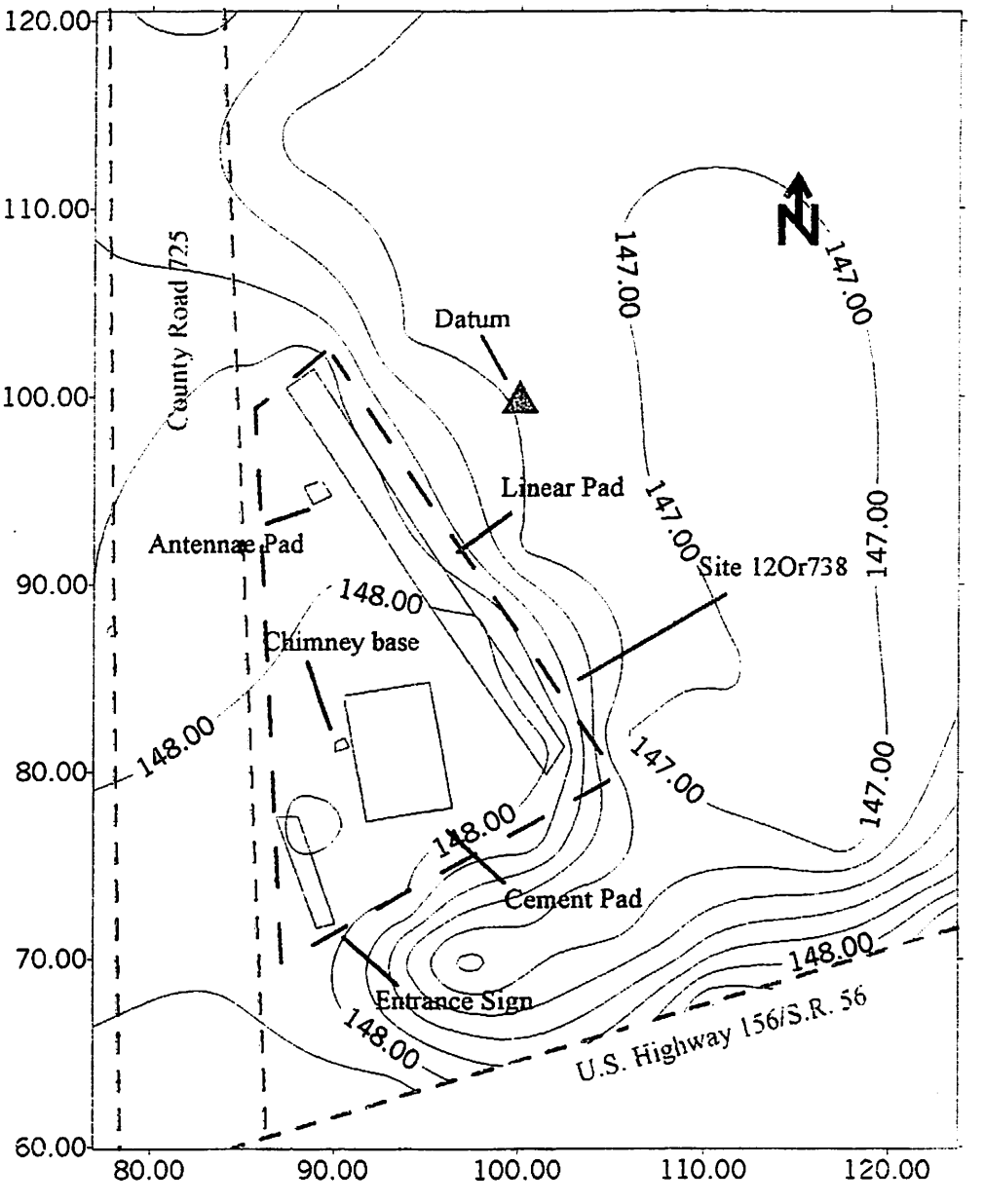


Figure 6: Contour map of site 12Or738.

Plate 1: View of the cement pad and the entrance sign documented at site 12Or738, looking southwest.

Plate 2: View of the chimney pad documented at site 12Or738, looking north.

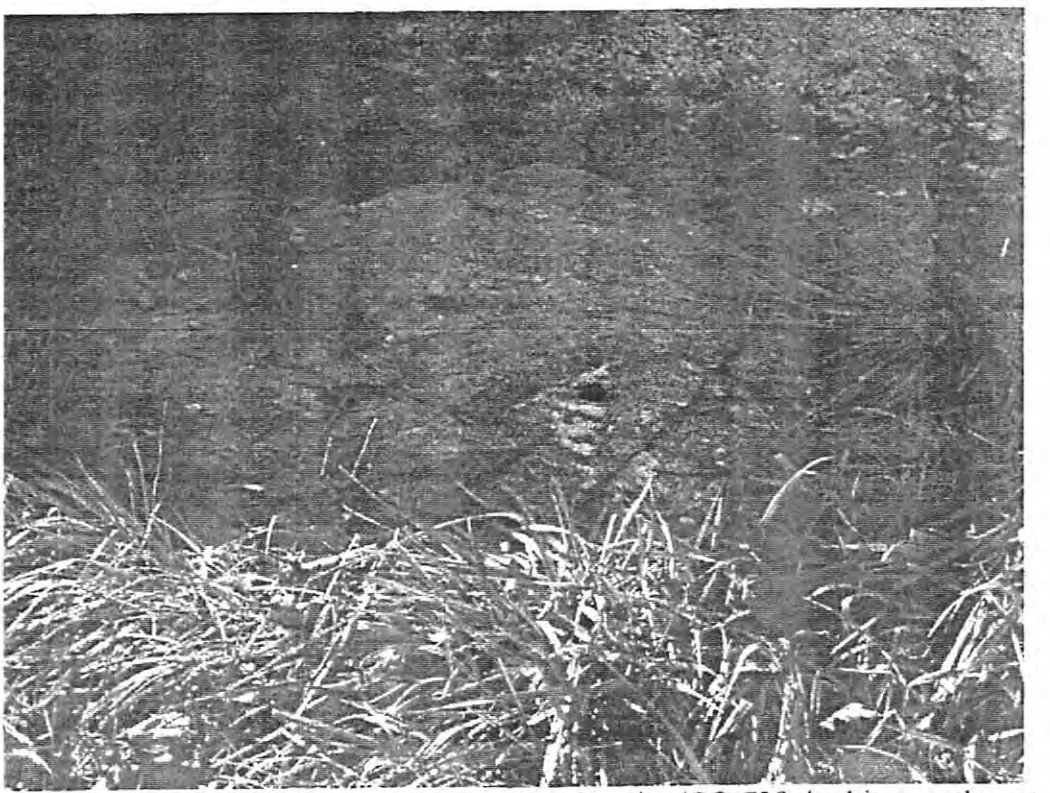


Plate 3: View of the antennae pad documented at site 12Or738, looking southwest.

Plate 4: View of the linear pad documented at site 12Or738, looking southeast.

Entrance Sign: This feature is located in the southern section of the site (Figure 6; Plate 1). This sign was being utilized as an advertisement for a lumberyard. The sign measures 6 m (northwest-southeast) by 1 m. The base of the sign consists of mortared cut and dressed limestone blocks, while the remainder of the sign is V-shaped. Mortared brick lines the edge of the V, while plywood is situated within the sign area.

Because the site is situated on an artificial plateau, it is believed that further archaeological investigation on site 12Or738 will not provide data that will enhance our understanding of either the site, or the history of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or738.

12Or739

This site was documented during the investigation in the eastern section of survey area PS-7 (Figures 3 and 5). The topography of the site consisted of a fairly level floodplain, while the ground cover consisted of harvested corn debris with visibility in the site area ranging between 40 and 50 percent. As noted in the discussion of PS-7, gravel was observed in the eastern section of the survey area. From this, it is believed that the site was not originally situated within the project area, but was deposited in the project area with the gravel.

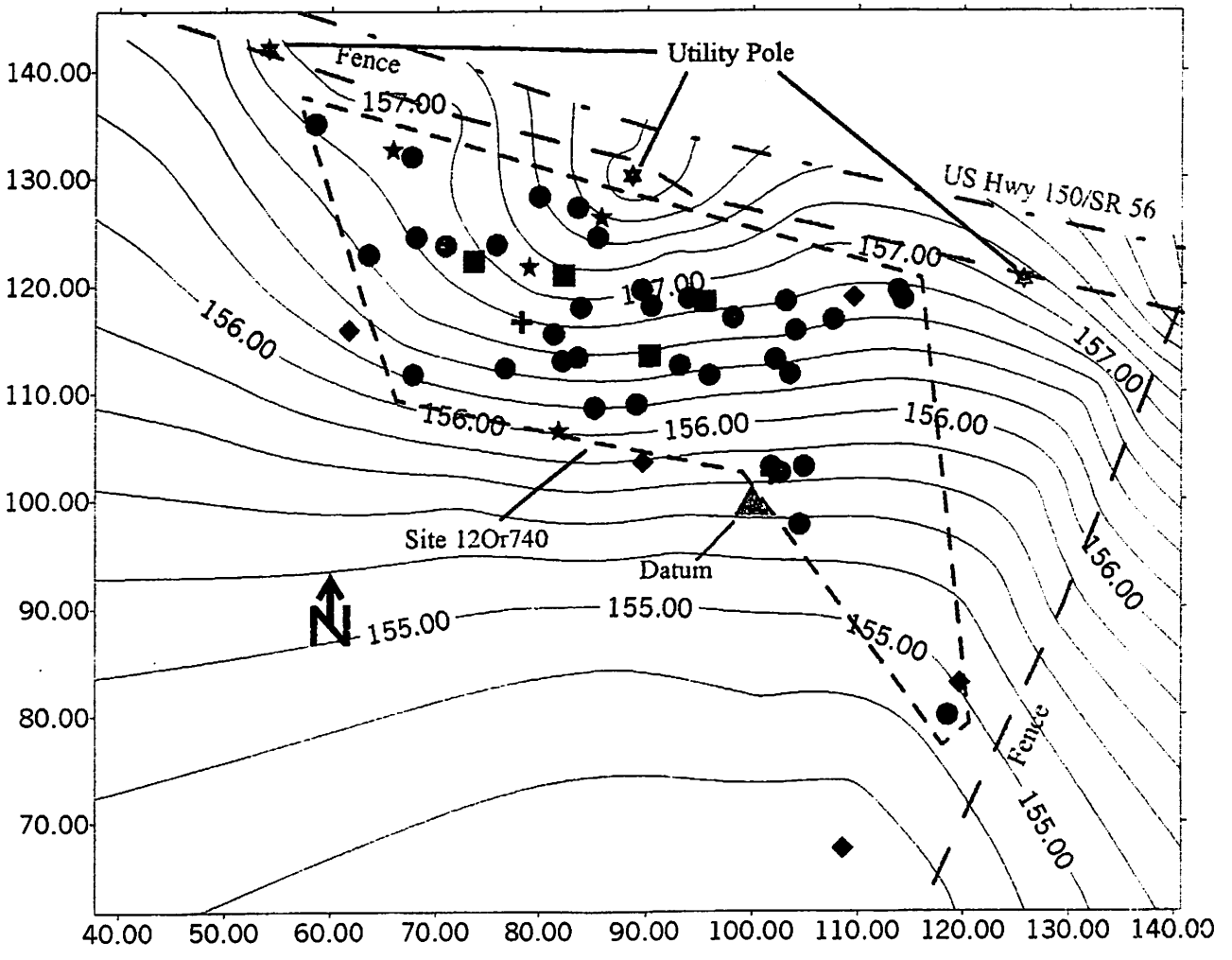
Only one artifact, a primary flake of indeterminate chert, was collected from the site. Because only one artifact was collected, the site consists of an isolated find. Since the primary flake is non-diagnostic, the cultural/temporal association of the site cannot be ascertained.

Since it is believed that the artifact was not originally situated within the project area, but rather arrived as part of the limestone gravel, the context of the site is questionable. As a result of this, plus the fact that the artifact is an isolated find, it is believed that additional work on site 12Or739 will not provide data that will enhance our understanding of the prehistory of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or739.

12Or740

This site was discovered during the investigation of survey area PS-14 (Figures 3 and 5). The site's topography consists of a ridgetop and its slopes (Figure 7). The ground cover consisted of harvested corn debris, with visibility ranging from 30 to 50 percent. Since two or more artifacts were collected from the site, the site consists of a lithic scatter. From the artifact distribution, the site size was determined to be 90 m (northwest-southeast) by 40 m.

Artifacts collected from the site (n=60) included lithic debitage, cores, bifaces (Plate 5), modified flakes, modified shatter, and modified checked cobble (Table 1). The metric measurements of the lithic tools are noted in Table 2. Lithic materials utilized included fossiliferous chert, indeterminate chert, Wyandotte chert, and St. Louis chert. Because no diagnostic artifacts were collected, the cultural/temporal association of site 12Or740 cannot be ascertained.



Legend

Circle = lithic debitage	Cross = biface
Diamond = non-artifact	Star = Core
Square = expedient lithic tools	

Figure 7: Contour map of site 12Or740.

Table 1: Artifact Inventory of Site 12Or740

Plot Number	Coordinates	Artifact	Lithic Material	Total
2	N80.0 E118.6	Secondary flake	St. Louis chert	1
		Shatter	St. Louis chert (heat-altered)	1
4	N97.7 E104.5	Indeterminate flake	St. Louis chert	1
		Tertiary flake	Wyandotte chert	1
5	N103.1 E104.9	Secondary flake	St. Louis chert	1
6	N102.5 E102.7	Checked cobble	Indeterminate blue chert	1
		Primary flake	Lost River	1
7	N103.1 E101.8	Secondary flake	Fossiliferous (heat-altered)	1
8	N102.4 E101.8	Biface (Stage I)	Lost River	1
9	N118.7 E114.2	Primary flake	Indeterminate chert	1
10	N119.5 E113.8	Shatter	Indeterminate tan local	1
12	N116.8 E107.7	Secondary flake	St. Louis chert	1
13	N111.7 E103.6	Tertiary flake	Lost River chert	1
14	N113.1 E102.2	Shatter	Indeterminate chert	1
15	N115.8 E104.1	Tertiary flake	Indeterminate chert (heat-altered)	1
16	N118.5 E103.2	Primary flake	St. Louis chert	1
17	N117.0 E98.2	Shatter	St. Louis chert	1
18	N111.6 E96.0	Primary flake	Indeterminate chert	1
		Shatter	Indeterminate chert (heat-altered)	1
19	N112.5 E93.2	Checked cobble	St. Louis chert	1
20	N112.3 E92.5	Primary flake	St. Louis chert	1
		Tertiary flake	Indeterminate chert (heat-altered)	1
21	N112.1 E90.4	Artifact lost in field		-
22	N113.4 E90.3	Modified primary flake	St. Louis chert	1
23	N108.9 E89.1	Indeterminate flake	St. Louis chert	1

Table 1: Artifact Inventory of Site 12Or740

Plot Number	Coordinates	Artifact	Lithic Material	Total
25	N108.6 E85.2	Shatter	St. Louis chert	1
26	N113.3 E83.6	Tertiary flake	Indeterminate chert	1
27	N113.0 E82.2	Primary flake	St. Louis chert	1
28	N115.5 E81.4	Shatter	St. Louis chert	1
29	N118.0 E82.9	Primary flake	St. Louis chert	1
		Secondary flake	Indeterminate chert (heat-altered)	1
		Shatter	St. Louis chert	1
		Shatter	Wyandotte chert	1
		Tertiary flake	Indeterminate chert (heat-altered)	1
30	N118.1 E90.5	Primary flake	St. Louis chert	1
31	N118.8 E94.0	Tertiary flake	Fossiliferous chert	1
32	N118.5 E95.6	Modified shatter	St. Louis chert	1
33	N119.6 E89.6	Secondary flake	St. Louis chert (heat-altered)	1
34	N124.5 E85.5	Indeterminate flake	Wyandotte chert	1
35	N126.3 E85.8	Core fragment	St. Louis chert	1
36	N127.3 E83.6	Primary flake	St. Louis chert	1
		Primary flake	St. Louis chert	1
37	N128.3 E80.0	Secondary flake	Lost River	1
37	N128.3 E80.0	Shatter	St. Louis chert	1
		Shatter	Lost River	1
38	N121.0 E82.3	Checked cobble	St. Louis chert	1
		Modified checked cobble	St. Louis chert	1
39	N121.7 E79.0	Core	St. Louis chert	1
40	N116.6 E78.3	Biface (Stage I)	Lost River chert	1
41	N112.3 E76.7	Primary flake	Indeterminate chert	1

Table 1: Artifact Inventory of Site 12Or740

Plot Number	Coordinates	Artifact	Lithic Material	Total
42	N106.4 E81.8	Core	St. Louis chert	1
44	N123.8 E75.8	Tertiary flake	Lost River chert	1
45	N122.3 E73.6	Modified core	St. Louis chert	1
46	N123.7 E70.9	Shatter	St. Louis chert	1
47	N124.5 E68.1	Checked cobble	St. Louis chert	1
48	N132.0 E67.7	Primary flake	Lost River chert	1
49	N132.6 E65.8	Core	St. Louis chert	1
		Shatter	St. Louis chert	1
50	N135.1 E58.5	Checked cobble	St. Louis chert	1
52	N111.7 E67.8	Checked cobble	St. Louis chert	1
53	N122.9 E63.6	Primary flake	St. Louis chert	1
			Total	**60**

An examination of the size of the artifacts indicates that they are for the most part rather large (Table 2). For sites in which artifacts manufactured from this material have been documented, a Paleoindian to Early Archaic occupation is indicated by the size of the artifacts made from St. Louis chert (Mark Cantin, personal communication, November 27, 2002). Analysis of the lithic debitage indicates that primary and secondary flakes and large pieces of shatter are the predominant debitage present. The size of these artifacts indicates that the site consisted of a lithic workshop. This interpretation is further supported by an examination of the two bifaces. Both are Stage I bifaces, which one would expect to find at a lithic workshop site.

A review of the other lithic tools indicates that they were expediently made. These tools would have been used once or twice and then discarded. This would indicate that the site was occupied for a brief period of time. However, the amount of material recovered from the site may indicate that the site was repeatedly reoccupied. Lacking more precise temporal data from the site, the over-all length of time the site may have been occupied cannot be determined.

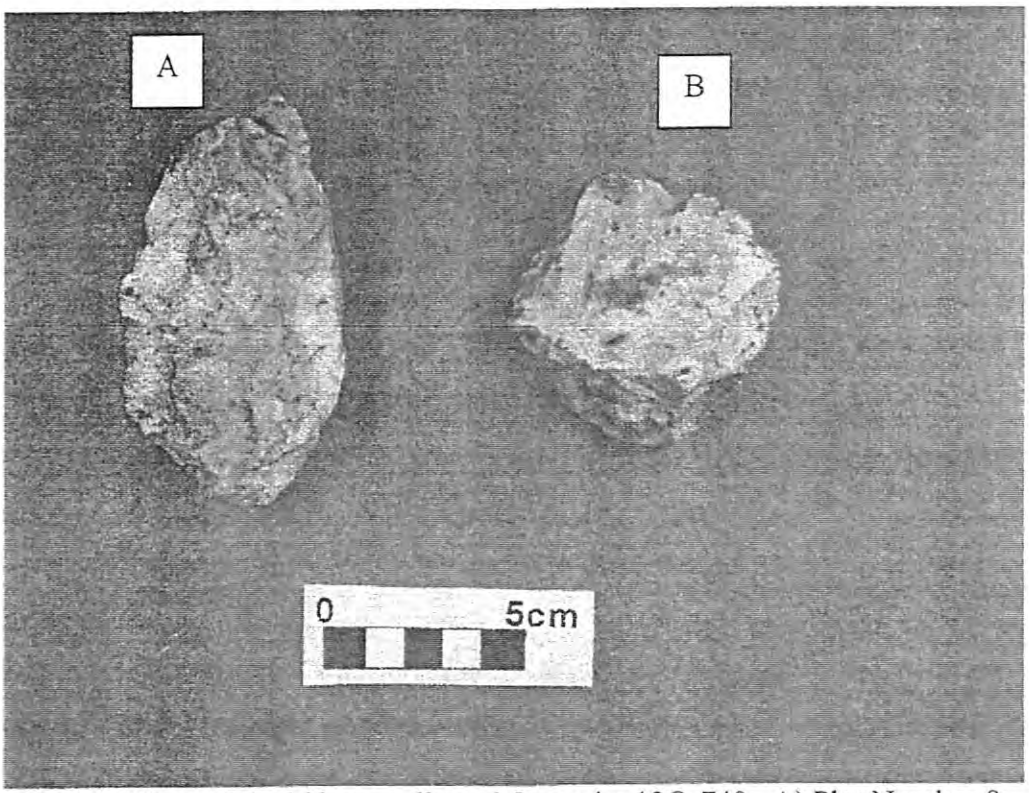


Plate 5: View of the bifaces collected from site 12Or740: A) Plot Number 8; B) Plot Number 40.

Table 2: Metric Measurements of Lithic Tools.

Site Number	Artifact	Lithic Material	Length (mm)	Width (mm)	Thickness (mm)
12Or740	Biface	Lost River chert	100.00	53.01	19.70
	Modified flake	St. Louis chert	36.30	20.14	7.42
	Modified shatter	St. Louis chert	28.97	11.80	6.78
	Modified checked cobble	St. Louis chert	93.94	59.85	24.09
	Biface	Lost River chert	61.16	59.98	26.19
	Modified core	St. Louis chert	57.78	47.30	26.28
12Or741	Modified secondary flake	Indeterminate chert	22.95	16.58	7.00
	Modified shatter	Indeterminate chert	27.07	17.10	8.85
	Brewerton projectile point	Indeterminate chert	37.24	23.85 base/20.64	8.81

Table 2: Metric Measurements of Lithic Tools.

Site Number	Artifact	Lithic Material	Length (mm)	Width (mm)	Thickness (mm)
12Or742	Projectile point fragment	Lost River chert	30.71	21.70	11.27
12Or747	Knife	Lost River chert	48.98	17.32	11.00

Due to the type of lithic material utilized from the site, the possible temporal association of the site, and the possibility that the site may have been occupied for a long period of time, it is believed that further work on the site may provide data that will enhance our understanding of the prehistory of the area. Additional work on site 12Or740 may provide information concerning settlement patterns in the area, site utilization during the Paleoindian and/or Early Archaic periods of prehistory, resources that were utilized/procured, etc. As a result of this potential for further information, the site is potentially eligible for inclusion on the NRHP. Consequently, it is recommended that further work, in the form of a Phase II investigation, should be conducted on site 12Or740 prior to any construction activities.

12Or741

This site was inventoried during the investigation of survey area SP-9 (Figures 3 and 5). The site is situated on a ridgetop, while the ground cover consisted of a pasture with 0 percent visibility. Due to the lack of visibility, the area was shovel probed.

Four shovel probes were positive and designated as site 12Or741; fifteen radial shovel probes were excavated, with three of them positive (Figure 8). From the positive shovel probes, the site size was determined to be 40 m (northwest-southeast) by 10 m. The site may extend to the southwest; however, since this area is located outside of the project area, it could not be determined if the site extends to the southwest. If the project area expands beyond its current proposed boundary, then investigation of site 12Or741 should be extended to determine if the site does extend beyond its current boundaries.

The soil profile observed in the shovel probes/radial shovel probes situated within the site area and its immediate vicinity consisted of a dark yellow brown (10YR3/6) clay loam A-horizon, which was followed by a strong brown (7.5YR4/6) clay loam subsoil. The depth of the A-horizon ranged from 29 cm to over 50 cm. A B-horizon was not encountered in 16 of the shovel probes/radial shovel probes. As a result of this, the average depth of the A-horizon could not be ascertained. No subsurface in situ cultural horizons were encountered.

There are several possible explanations for the relative thickness of the A-horizon. One is that the site contains a midden, whose color is similar to the A-horizon and thus the midden could not be distinguished from the A-horizon. While this is a possibility, this explanation is not likely. If there was a thick midden at the site, then a large number of artifacts would be expected, as well as pieces of fire-cracked rock (FCR). The small number of artifacts and the lack of FCR suggest that a midden was not encountered.

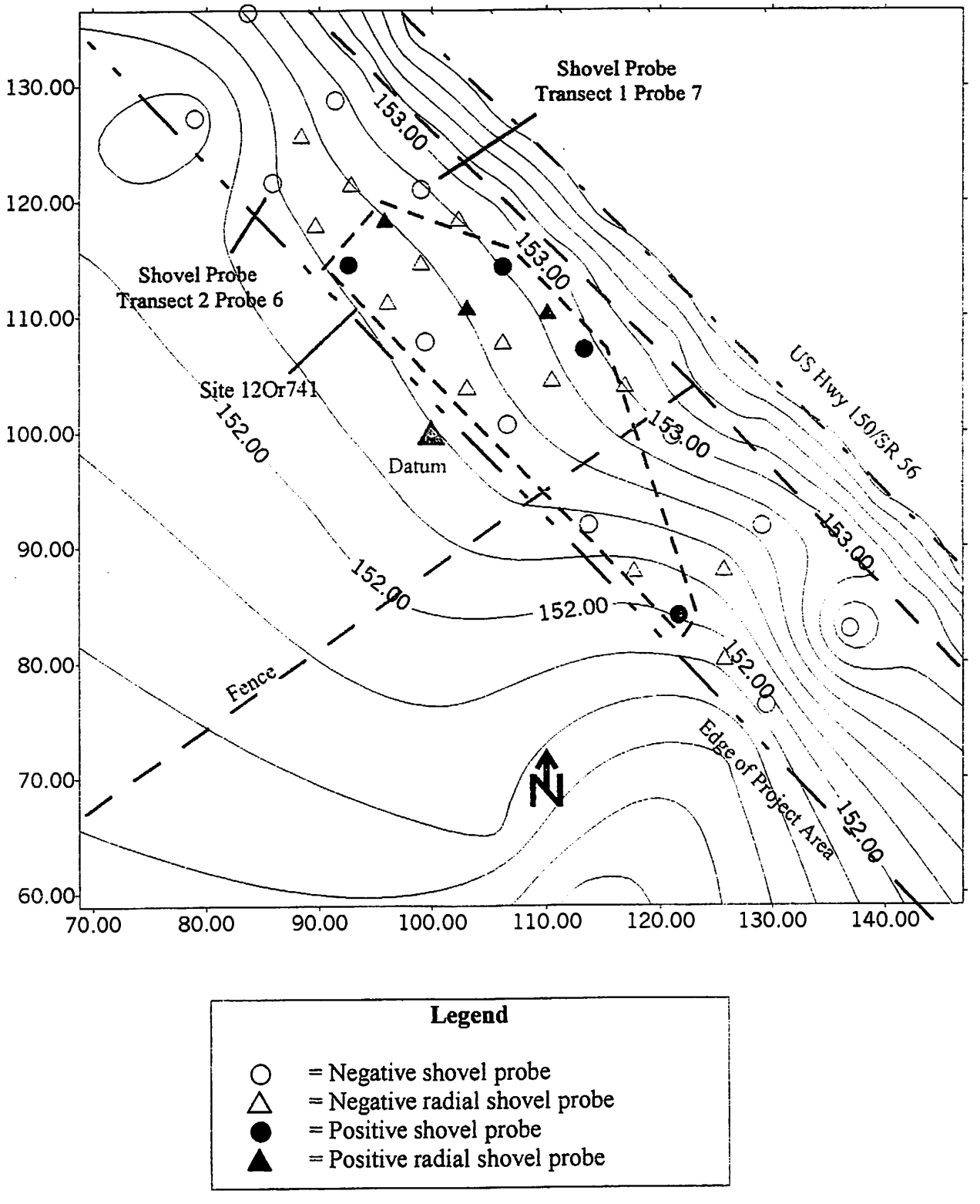


Figure 8: Contour map of site 12Or741.

Another explanation could be that a B-horizon was encountered, but a color change was not evident between the A and B-horizons. The soil texture was much more clay-like at the base of the shovel probes/radial shovel probes, than at the beginning of the shovel probes/radial shovel probes. This would suggest that a B-horizon was either encountered, or the interface between the A-horizon and B-horizon is diffuse and much larger then would be expected.

A third possibility is that the A-horizon, for an unknown reason, is much thicker and deeper in the area of the site then in the surrounding area/region. It is believed that the second and/or third possibilities are the more plausible explanation for the A-horizon's thickness/depth.

Artifacts collected from site 12Or741 (n=7) include shatter (n=3), primary flake (n=1), modified secondary flake (n=1), modified shatter (n=1), and a Brewerton projectile point (n=1) [Table 3]. Since more then one artifact was collected from the site, the site consists of a lithic scatter. The Brewerton projectile point (Plate 6) is associated with the Late Archaic period of prehistory (Justice 1987). Therefore, the site was utilized during the Late Archaic period. Metric measurements of the lithic tools (modified secondary flake, modified shatter, and the Brewerton projectile point) are noted in Table 2. Lithic materials utilized at the site include fossiliferous chert (n=1), Lost River chert (n=2), and indeterminate chert (n=4) [Table 3].

Table 3: Artifact Inventory of Site 12Or741

Transect	Probe	Artifact	Lithic Material	Total
1	8	Modified secondary flake	Indeterminate chert (heat-altered)	1
1	8E	Modified shatter	Local chert	1
1	8S	Shatter	Indeterminate chert	1
1	9	Shatter	Fossiliferous chert (heat-altered)	1
2	7	Primary flake	Indeterminate chert (heat-altered)	1
2	7N	Brewerton projectile point	Indeterminate chert	1
2	11	Shatter	Local chert	1
			Total	7

An examination of the artifact assemblage indicated that the site was utilized for a brief period of time, and except for the projectile point, the tools were quickly made, utilized, and probably discarded immediately after their use. These tools (modified secondary flake and shatter) indicate that they were probably used for hide preparation. The projectile point would have been utilized for hunting and possibly as a knife.

While it is recognized that further work on site 12Or741 may yield additional artifacts, it is believed that these artifacts will not provide data that will enhance our understanding of the

prehistory of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or741.

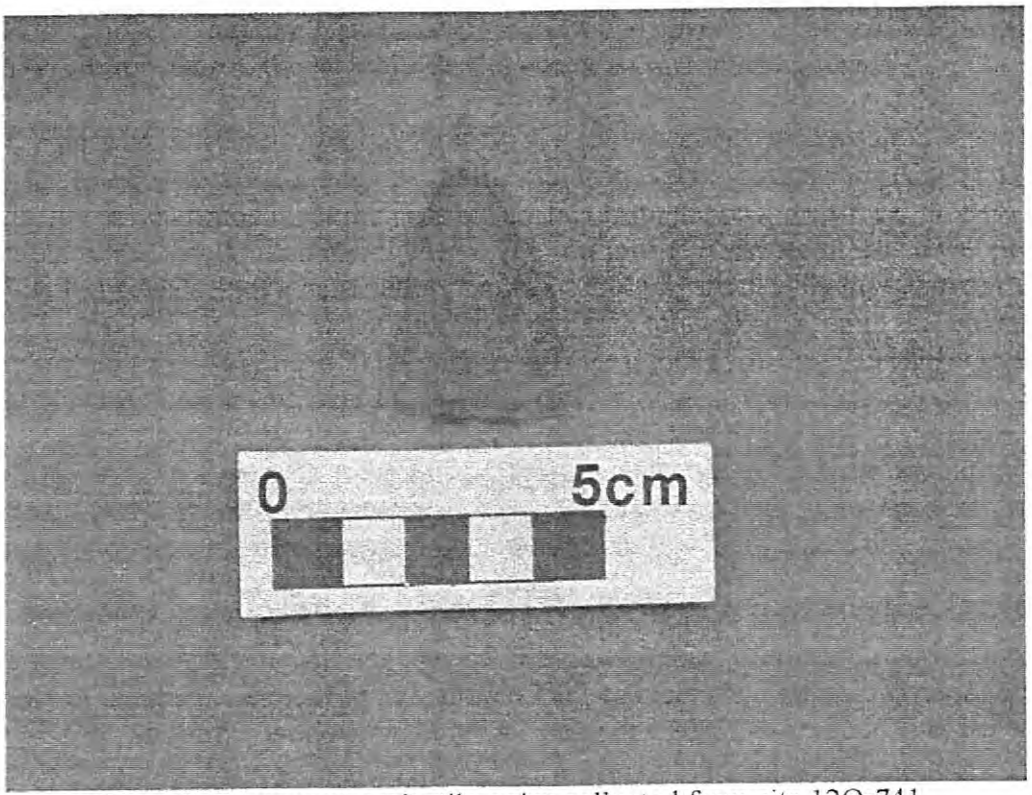


Plate 6: Brewerton projectile point collected from site 12Or741.

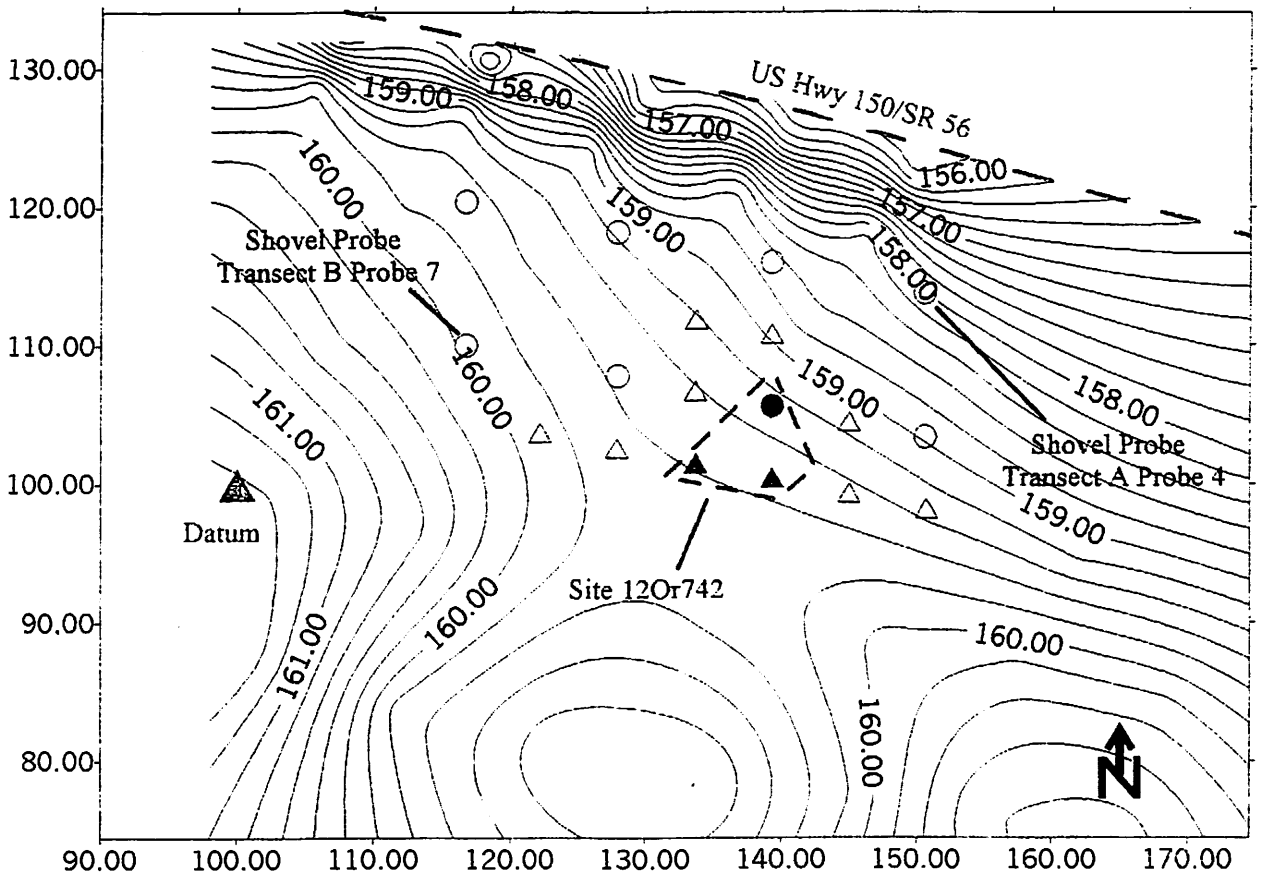
12Or742

This site was discovered near the edge of a sinkhole during the investigation of survey area SP-10 (Figures 3 and 5). The ground cover consisted of a fallow field with 0 percent visibility. The site area and its vicinity were shovel probed.

One shovel probe and two of ten radial shovel probes were positive (Figure 9). From the positive shovel probes, the site size was determined to be 5 m (north-south) by 5 m.

The soil profile observed in the shovel probe/radial shovel probe consisted of a dark yellow brown (10YR4/4) clay loam A-horizon followed by a yellow brown (10YR5/6) clay loam subsoil. The depth of the A-horizon ranged from immediately below the sod layer to 33 cm, with an average depth of 21 cm. No subsurface in situ cultural horizons were encountered.

Artifacts collected from the site (n=3) consisted of an indeterminate projectile point fragment (Plate 7) and debitage (Table 4). The metric measurements of the indeterminate projectile point are noted in Table 2. Since the projectile point fragment could not be typed, the cultural/temporal association of the site could not be ascertained. Lithic materials utilized at site 12Or742 consisted of Lost River chert.



Legend

○ = Negative shovel probe
△ = Negative radial shovel probe
● = Positive shovel probe
▲ = Positive radial shovel probe

Figure 9: Contour map of site 12Or742.

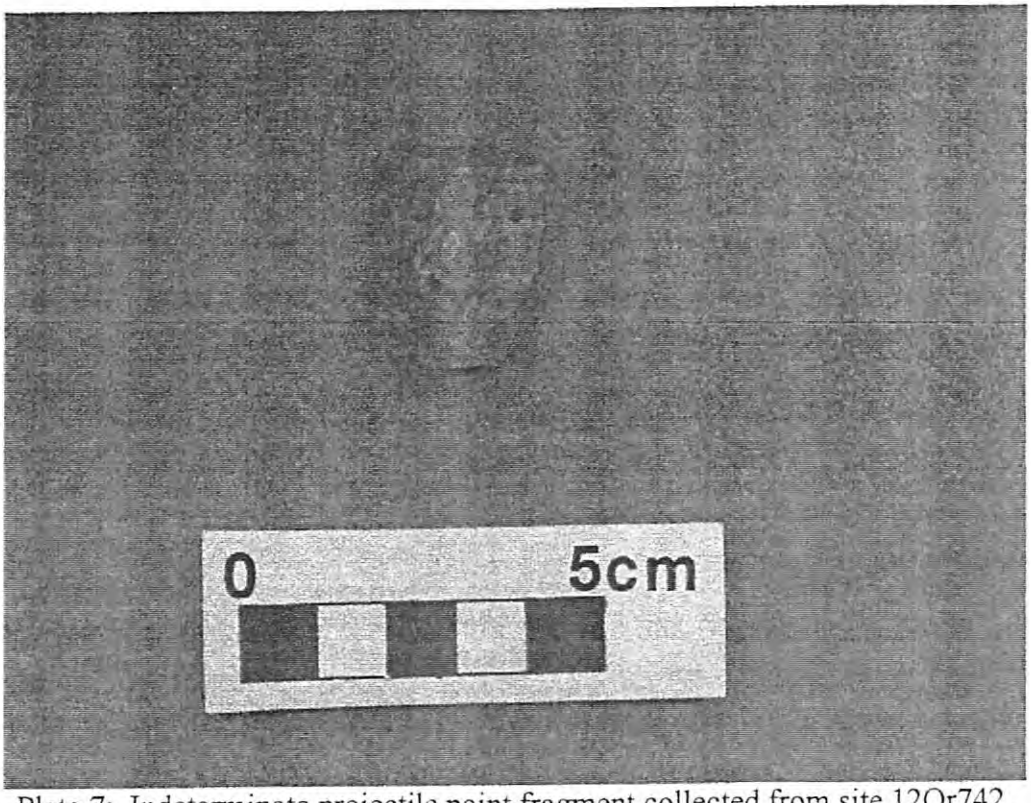


Plate 7: Indeterminate projectile point fragment collected from site 12Or742.

Table 4: Artifact Inventory of Site 12Or742

Transect	Probe	Artifact	Lithic material	Total
B	5	Secondary flake	Local chert	1
B	5S	Medial section projectile point fragment	Local chert	1
B	5SW	Shatter	Local chert	1
			Total	3

Although it is understood that additional work at site 12Or742 may yield more artifacts, it is believed that these artifacts will not provide data that will enhance our knowledge of the prehistory of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or742.

12Or743

This site was documented during the investigation of survey area SP-11 (Figures 3 and 5). The site is situated on a gradual slope, while the ground cover consisted of a pasture with 0

percent visibility. As a result of the lack of visibility, the site area and its vicinity were shovel probed.

One shovel probe was positive. Due to the positive shovel probes, 10 radial shovel probes were excavated with two of them positive (Figure 10). The area immediately north of the northern radial shovel probes had been landscaped, which was determined by the presence of a very steep slope that did not follow the original slope of the landform. Thus, shovel probes were not excavated in this area. From the positive shovel probe/radial shovel probes, the site size was determined to be 5 m (north-south) by 5 m.

There is a possibility that the site might extend south of the present site boundary. However, since this area is located outside of the project area, this area could not be examined. If the proposed project extends beyond its present boundary, then archaeological work will need to be undertaken to determine if the site extends beyond its present boundaries.

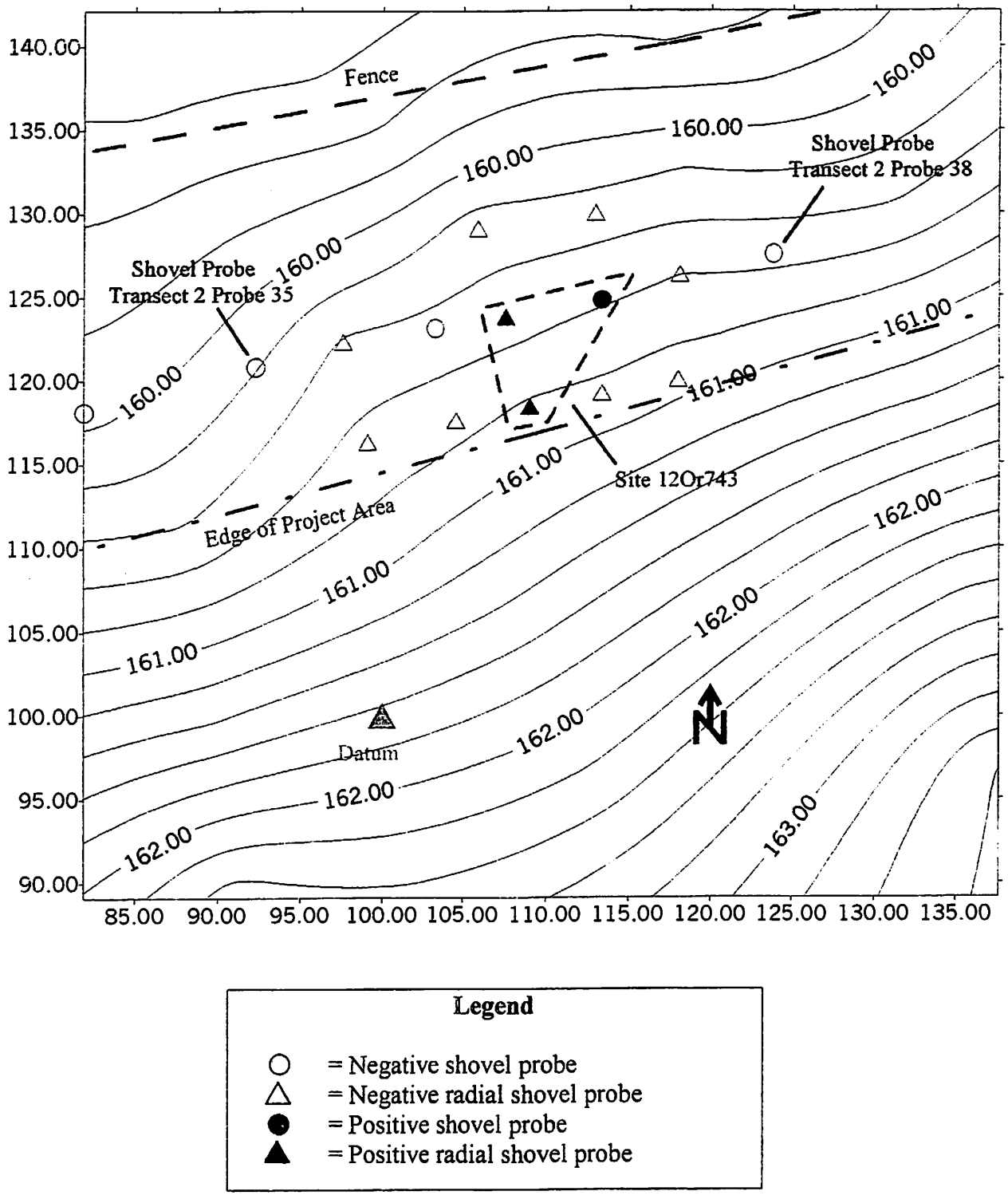
The soil profile observed in the shovel probes/radial shovel probes situated within the site area and its vicinity consisted of a brown (10YR4/3) silt clay loam A-horizon followed by a yellow brown (10YR5/4) silt clay subsoil. The depth of the A-horizon ranged between 24 cm and 50 cm, with an average depth of 35 cm. No subsurface in situ cultural horizons were encountered.

Artifacts collected from the site (n=3) consisted of lithic debitage (Table 5). Since no diagnostic artifacts were collected from the site, the cultural/temporal association of the site could not be ascertained. All of the artifacts were made from Lost River chert. Since more then one artifact was collected, the site was determined to be a small lithic scatter.

Table 5: Artifact Inventory of Site 12Or743

Transect	Probe	Artifact	Lithic material	Total
2	37	Shatter	Local chert	1
2	37SW	Secondary flake	Local chert	1
2	37W	Primary flake	Local chert	1
			Total	**3**

While it is understood that additional work at site 12Or743 may yield more artifacts, it is believed that these artifacts will not increase our knowledge of the prehistory of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or743.



Legend

○ = Negative shovel probe
△ = Negative radial shovel probe
● = Positive shovel probe
▲ = Positive radial shovel probe

Figure 10: Contour map of site 12Or743.

12Or744

The site was inventoried during the investigation of SP-13 (Figures 3 and 5). The site is located on a ridgetop and gradual slope with the ground cover consisting of a fallow field with 0 percent visibility. Due to the lack of visibility, the area was shovel probed.

A possible artifact was collected from one shovel probe. As a result of this, radial shovel probes (n=5) were excavated, with one of the radial shovel probes positive (Figure 11). After analysis, it was determined that the possible artifact from the positive shovel probe was not an artifact but rather a natural chunk of chert. The soil profile observed in the shovel probe/radial shovel probes consisted of a dark yellow brown (10YR4/4) silt clay loam A-horizon followed by a strong brown (7.5YR4/6) silt clay subsoil. The depth of the A-horizon in the site area and its vicinity ranged from 19 cm to 40 cm, with an average depth of 30 cm. No subsurface in situ cultural horizons were encountered.

One artifact, a secondary flake of Lost River chert, was collected from the site. Since only one artifact was collected, the site consists of an isolated find. Also, because the artifact is non-diagnostic, the cultural/temporal association of the site could not be determined.

While it is understood that further work at site 12Or744 may yield more artifacts, it is believed that these artifacts will not provide information that will increase our knowledge of the prehistory of the area. Because of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or744.

12Or745

The site also was discovered during the investigation of SP-13 (Figures 3 and 5). The site is located on a ridgetop with the vegetation consisting of a fallow field with 0 percent visibility. Due to the nonexistent visibility, the area was shovel probed.

One shovel probe was positive; thus two radial shovel probes were excavated (Figure 12). Both of the radial shovel probes were negative. Radial shovel probes were not excavated south and east of the positive shovel probe because these two radial shovel probes would have been situated within the ditch along the edge of the road. The profile of the positive shovel probe consisted of a dark yellow brown (10YR4/4) clay loam A-horizon, followed by a strong brown (7.5YR4/6) clay loam. The depth of the A-horizon was 20 cm. No subsurface in situ cultural horizons were encountered in the shovel probe.

Only one artifact, a tertiary flake of Lost River chert, was collected from the site. Since only one artifact was collected, the site consists of an isolated find. Also, because no diagnostic artifacts were collected, the temporal/cultural association of the site could not be ascertained.

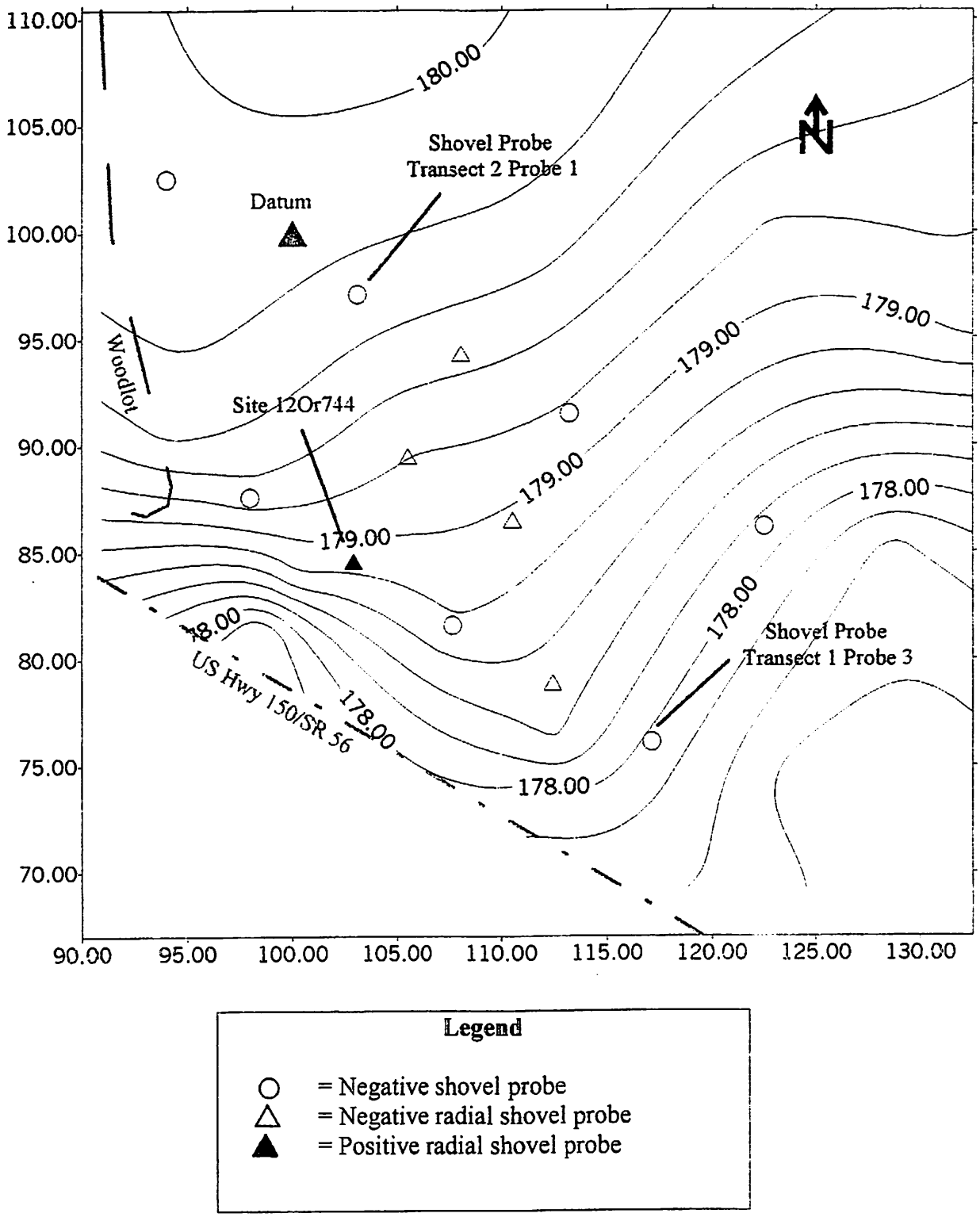


Figure 11: Contour map of site 12Or744.

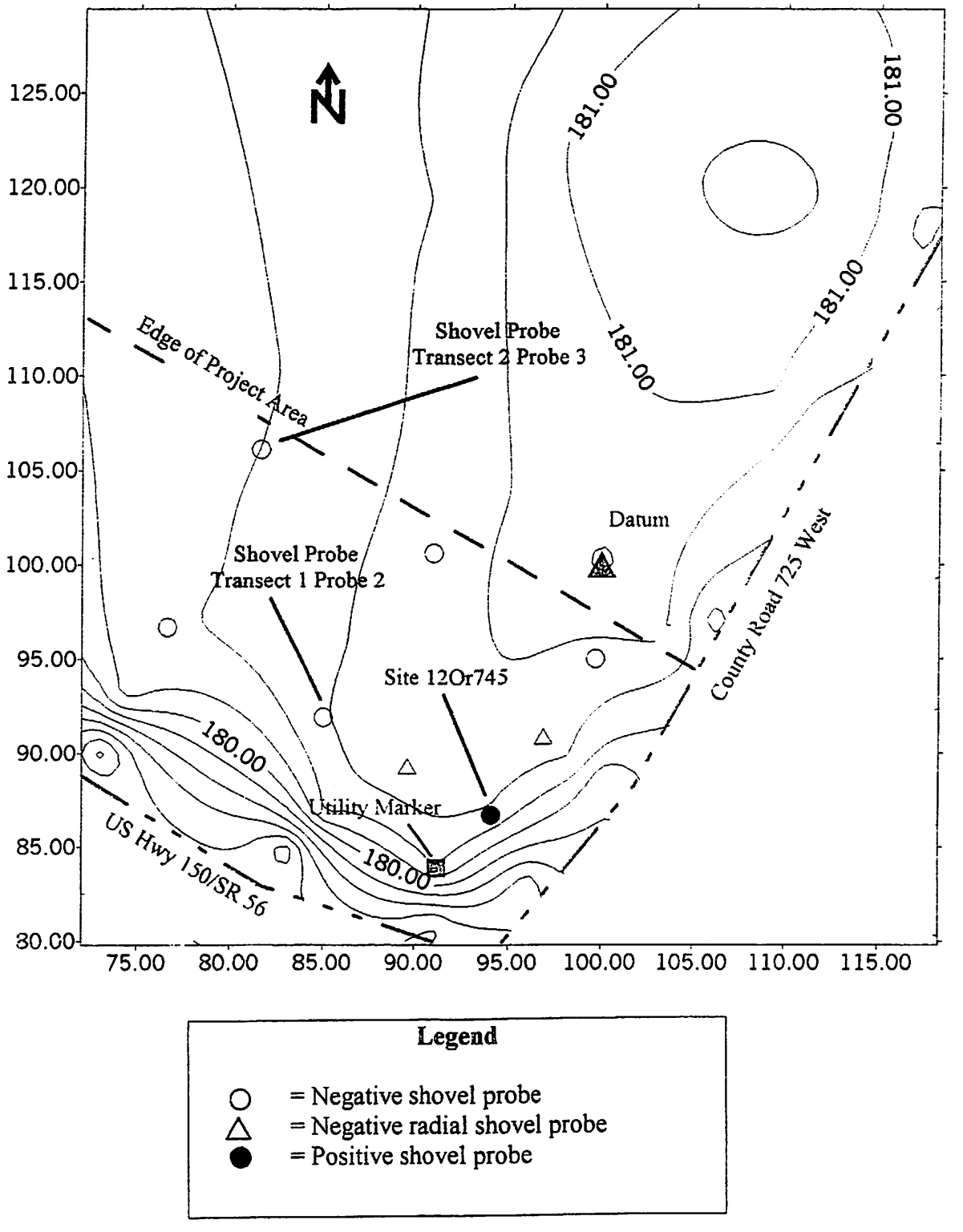


Figure 12: Contour map of site 12Or745.

Although additional work may provide more artifacts, it is believed that these artifacts will not provide information that will enhance our understanding of the prehistory of the region. Therefore, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or745.

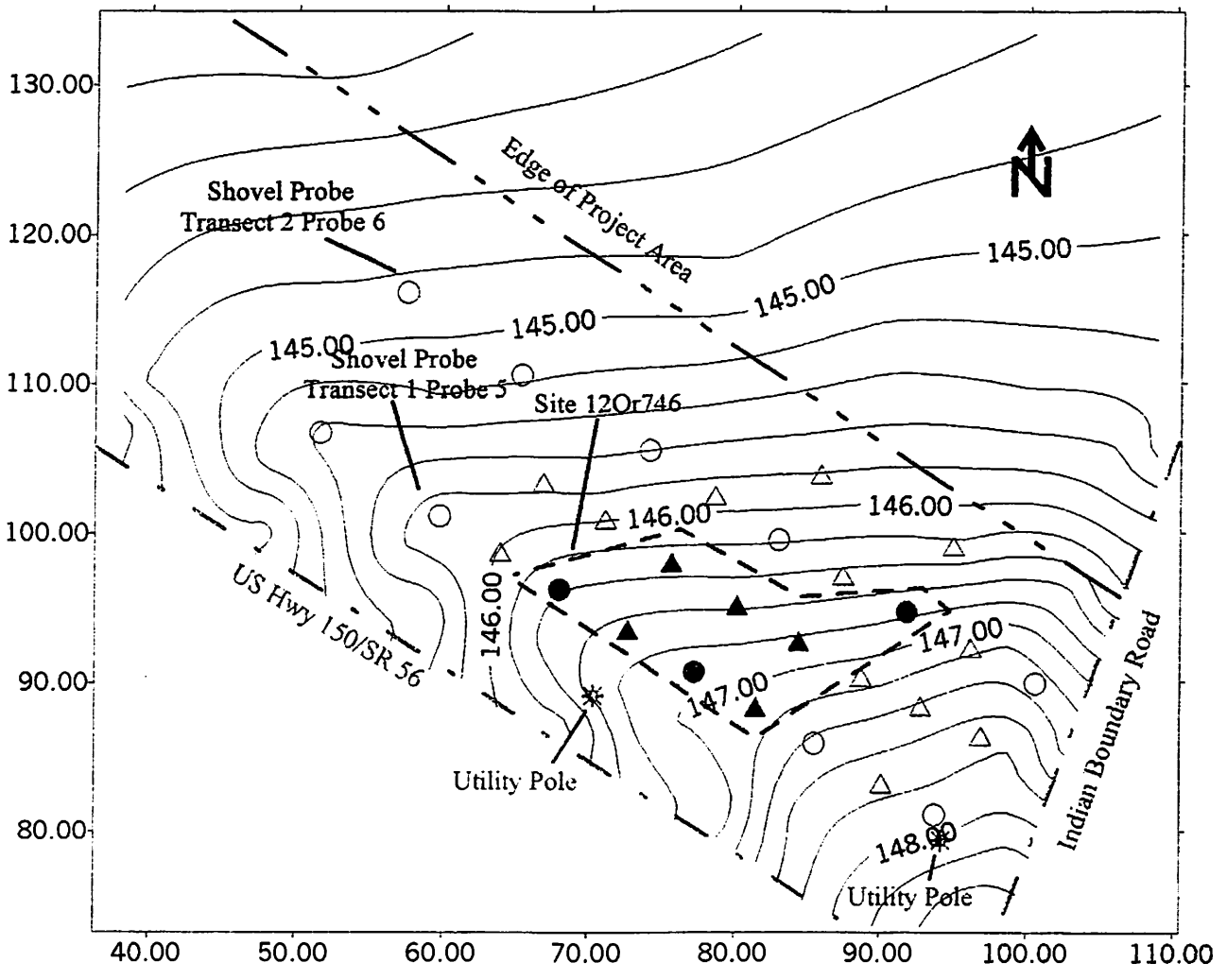
12Or746

This site was documented during the investigation of survey area SP-15 (Figures 3 and 5). The site is located on a gradual slope in a fallow field with 0 percent visibility. As a result of the lack of visibility, the area was shovel probed.

Three shovel probes were positive. Due to the positive shovel probes, 17 radial shovel probes were excavated, with five of them positive (Figure 13). From the positive shovel probes/radial shovel probes, the site size was determined to be 10 m (northeast-southwest) by 20 m. The soil profile observed in these shovel probes/radial shovel probes consisted of a dark yellow brown (10YR4/4) silt clay loam A-horizon, which was followed by a strong brown (7.5YR4/6) clay loam subsoil. The depth of the A-horizon ranged from 9 cm to 39 cm, with an average depth of 23 cm. No subsurface in situ cultural horizons were encountered.

Because no foundation remnants or cartographic indications of a structure could be determined for this site, it is an historic scatter. Artifacts collected from the site (n=12) fall into two functional categories: Architecture (n=7), and Kitchen (n=5) [Table 6]. Diagnostic artifacts (cut nails, aqua container glass fragment, and aqua flat glass fragment) indicate that the site was utilized in the late nineteenth century. Analysis of the artifacts collected from the site suggests that an outbuilding was situated at the site and allowed to deteriorate and eventually collapse. As for the location of the outbuilding, this cannot be determined at this time.

While it is recognized that further work at site 12Or746 may yield additional artifacts, it is believed that these artifacts will not provide data that will increase our understanding of the history of the site, or of the area. As a result, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or746.



Legend

○ = Negative shovel probe
△ = Negative radial shovel probe
● = Positive shovel probe
▲ = Positive radial shovel probe

Figure 13: Contour map of site 12Or746.

Table 6: Artifact Inventory of Site 12Or746

Transect	Probe	Functional Category	Artifact	Total	Date Range	Reference
1	3	Architecture	Cut nail fragment	1	ca 1790-1890	Nelson 1968
1	3	Kitchen	Whiteware sherd (lost in field)	1	1820-present	Magid 1984
1	3E	Architecture	Cut nail	1	ca 1790-1890	Nelson 1968
1	3E	Kitchen	Whiteware sherd	1	1820-present	Magid 1984
1	3E	Kitchen	Container glass fragment, aqua	1	1880-1920	Gillio et al. 1980
1	3N	Architecture	Cut nail fragment	2	ca 1790-1890	Nelson 1968
1	3N	Kitchen	Redware sherd	1	ca 1820-1900	Mansberger 1986
1	3NW	Architecture	Indeterminate brick/field tile fragment	1	-	-
1	4	Architecture	Cut nail	1	ca 1790-1890	Nelson 1968
1	4	Kitchen	Container glass fragment, clear	1	-	-
2	2	Architecture	Flat glass, aqua	1	1880-1920	Gillio et al. 1980
			Total	**12**		

12Or747

The site was inventoried during the investigation of survey area SP-16 (Figures 3 and 5). Situated on a ridgetop and slopes, the site was in a pasture with 0 percent visibility. Due to the lack of visibility, the area was shovel probed. Because the site yielded two or more artifacts, it consists of a lithic scatter.

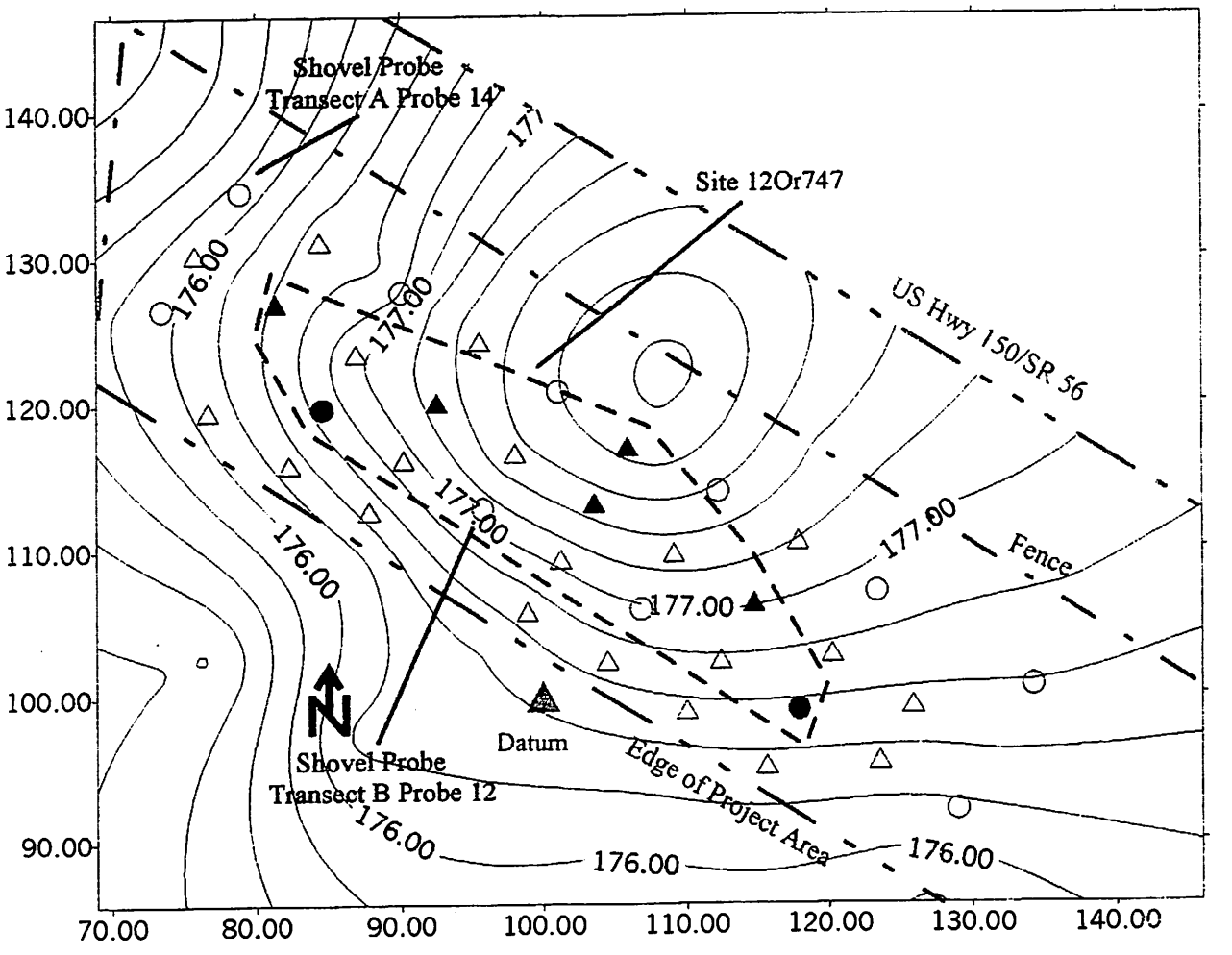
One shovel probe was positive. As a result of the positive shovel probe, radial shovel probes were excavated (n=26), with six of them positive (Figure 14). The soil profile consisted of a dark yellow brown (10YR4/4) clay loam A-horizon followed by either a strong brown (7.5YR4.6) clay loam or a yellow red (5YR5/6) clay subsoil. The depth of the A-horizon ranged from just below the sod layer to 32 cm, with an average depth of 20.5 cm. No subsurface in situ cultural horizons were encountered. Based on positive shovel/radial probes, site size is 10 m (north-south) by 15 m.

Artifacts collected from site 12Or747 (n=12) included debitage, fire-cracked chert, and a knife (Table 7). No diagnostic artifacts were collected; consequently, the cultural/temporal association of the site cannot be ascertained. The metric measurements of the knife (Plate 8) are noted in Table 2. Lithic materials utilized included Lost River chert, cobble chert, fossiliferous chert, and indeterminate chert.

Table 7: Artifact Inventory of Site 12Or747

Transect	Probe	Artifact	Lithic material	Total
A	12E	Secondary flake	Lost River chert	1
B	11N	Fire-cracked chert	Indeterminate chert	1
B	11N	Primary flake	Lost River chert	1
B	11NE	Shatter	Lost River chert	1
B	12NE	Tertiary flake	Lost River chert	1
B	12NE	Shatter	Indeterminate chert	1
B	12NE	Fire-cracked chert	Lost River chert	1
B	13	Knife	Lost River chert	1
B	13	Shatter	Cobble chert	1
B	13NE	Tertiary flake	Indeterminate chert	1
B	13NW	Tertiary flake	Fossiliferous chert	1
B	13W	Primary flake	Lost River chert	1
			Total	**12**

While it is understood that further work on site 12Or747 may yield additional artifacts, it is believed that these artifacts will not provide data that will increase our understanding of the prehistory of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or747.



Legend

○ = Negative shovel probe
△ = Negative radial shovel probe
● = Positive shovel probe
▲ = Positive radial shovel probe

Figure 14: Contour map of site 12Or747.

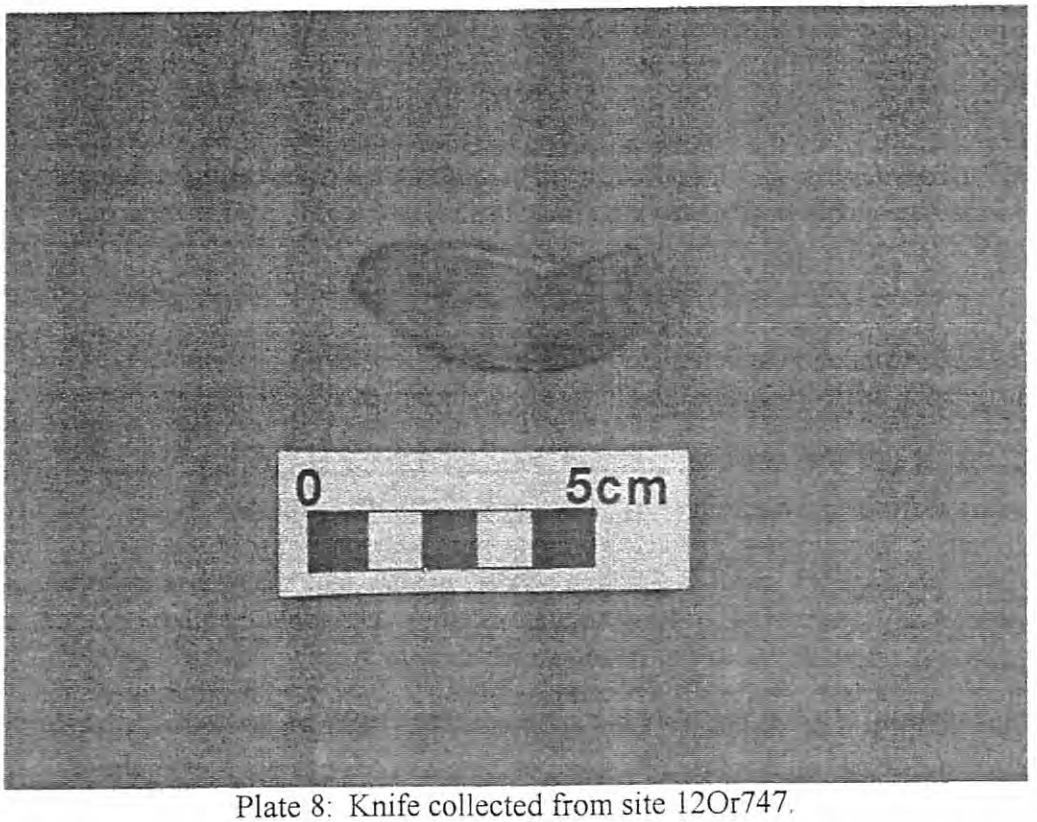


Plate 8: Knife collected from site 12Or747.

12Or748

The site was documented during the visual inspection and shovel probing of a ridgetop in SP-17 (Figures 3 and 5). The ground cover within the site area consisted of woods and secondary growth with 0 percent visibility. The area was shovel probed.

Prior to shovel probing of the woods, visual inspection documented foundation remnants of a house within the project area. An examination of the USGS Paoli quadrangle (7.5' topographic map) documents a building at site 12Or748. Visual inspection also documented several other features, which are discussed in more detail below. The site consists of a farmstead.

As a result of the house foundation remnants, shovel probes were excavated at 5-m intervals. A total of 18 shovel probes were excavated, with three of them positive (Figure 15). The soil profile observed in the shovel probes consisted of a dark brown (10YR3/3) silt clay loam A-horizon followed by a dark yellow brown (10YR4/4) clay loam subsoil. The depth of the A-horizon ranged from 10 cm to 50 cm, with an average depth of 28 cm. No subsurface in situ cultural horizons were encountered. The shovel probes excavated east of the house foundation encountered gravel within the A-horizon. From the positive shovel probes and the features, the site size was determined to be 95 m (northeast-southwest) by 55 m.

Artifacts collected/documented from these shovel probes (n=5) all fall into the Architecture functional group (Table 8). The only diagnostic artifact is a wire nail, which indicates that the site was utilized in the twentieth century.

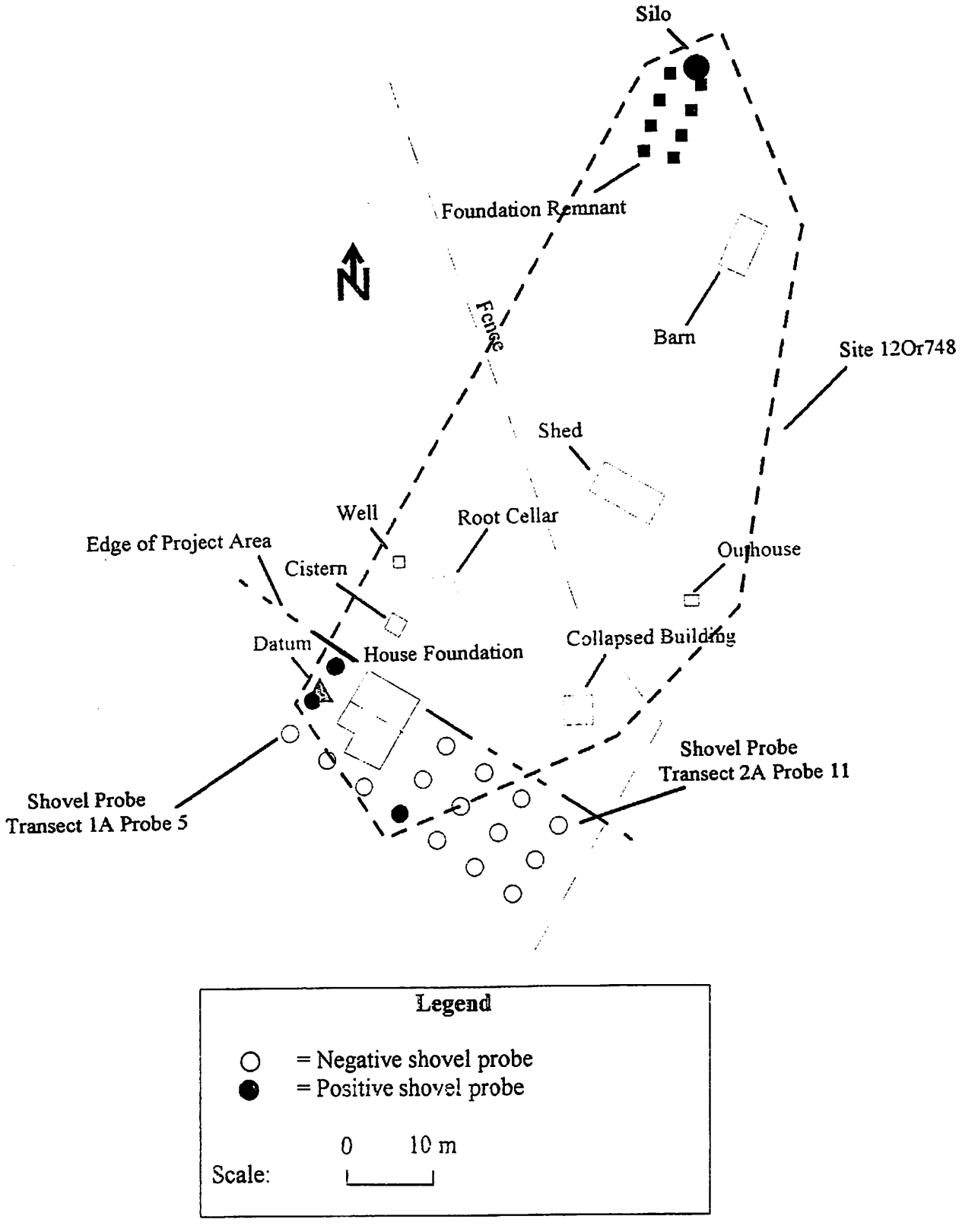


Figure 15: Schematic map of site 12Or748.

Table 8: Artifact Inventory of Site 12Or748.

Transect	Probe	Functional Group	Artifact	Total	Date Range	Reference
1	5	Architecture	Brick (nc)	1	-	-
1A	8	Architecture	Flat glass, clear	2	-	-
			Wire nail	1	common ca 1890-present	Nelson 1968
2	5	Architecture	Brick (nc)	1	-	-
			Total	**5**		

nc = not collected

A total of 10 features were documented at site 12Or748. These features consist of a house foundation, cistern, well, root cellar, outhouse, collapsed building, shed, barn, silo, and foundation remnants (Figure 15). The following is a brief description of each feature beginning with the house foundation.

House foundation: This feature is located in the southern section of the site (Figure 15). Visual inspection of this feature indicates that only the foundation is present. The foundation consists of cut and dressed limestone blocks (Plate 9). An examination of the foundation indicates that the blocks lined the entire base of the house; thus, the house did not rest on a pier foundation. The foundation not only lined the exterior walls of the house, but was placed near the center of the house, which indicated that the house had a support wall. Further examination of the foundation indicated that the house had a front porch (Plate 10), which indicates that the house faced toward the southwest and US Highway 150/State Road 56.

The dimensions of the house measured 7 m (northeast-southwest) by 7 m. The porch measured 1 m (northeast-southwest) by 5 m.

Plate 9: View of the house foundation documented at site 12Or748, looking southeast.

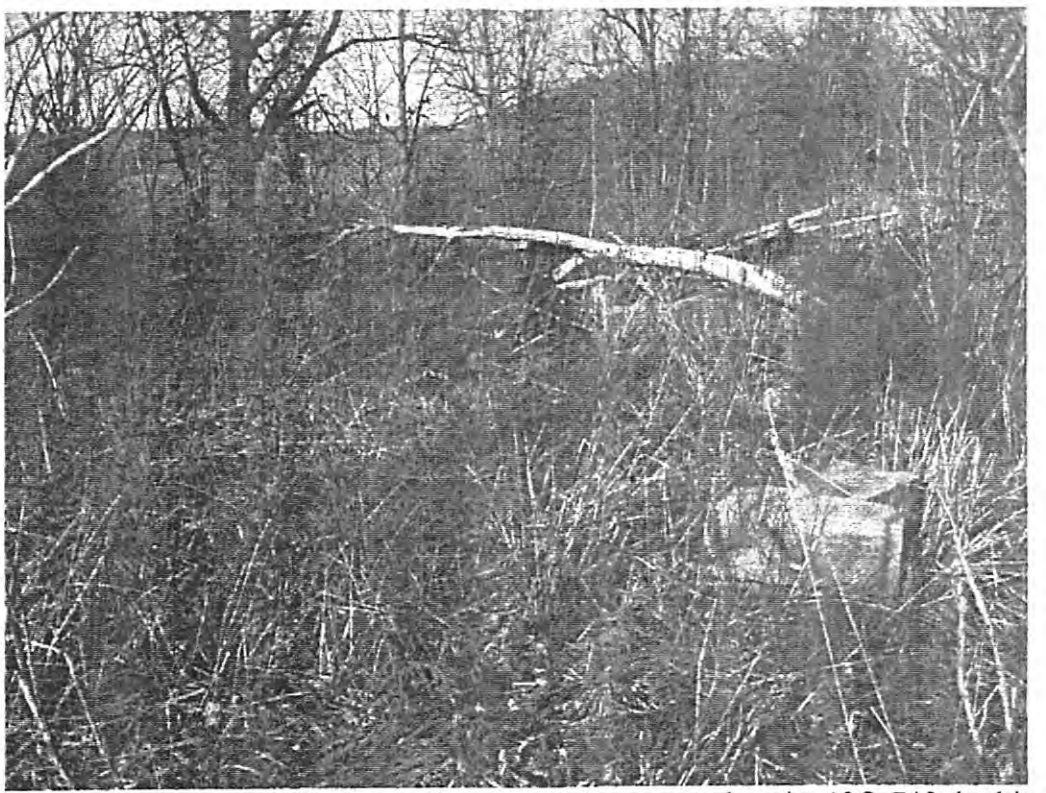


Plate 10: View of the porch of the house foundation documented at site 12Or748, looking north.

Cistern: This feature is located north of the house foundation (Figure 15). Visual inspection of the cistern indicated that it is capped with a poured cement pad (Plate 11). As a result of this, the building materials and shape of the cistern could not be determined. The cap measures 1 m (northeast-southwest) by 1 m.

Well: This feature is located north of the cistern (Figure 15) and consists of a metal pipe extending upward (Plate 12). No pump was observed on the metal. The pipe is situated in the center of a poured cement pad that measures .5 m (north-south) by .5 m.

Root Cellar: This feature is located east of the well and northeast of the cistern (Figure 15). The building, which sat on top of the cellar, has collapsed within the cellar (Plate 13). The size of the cellar is 4 m (northeast-southwest) by 3.5 m and approximately 1.5 m in depth. The entrance, which is located on the southwest corner of the southeastern wall, had poured cement steps that lead from the ground surface to the base of the cellar. The entrance measures 1 m (northwest-southeast) by 1.5 m. The cellar walls consist of mortared brick with a poured cement facing on the interior and exterior walls (Plate 14).

Plate 11: View of the cistern documented at site 12Or748, looking northwest.

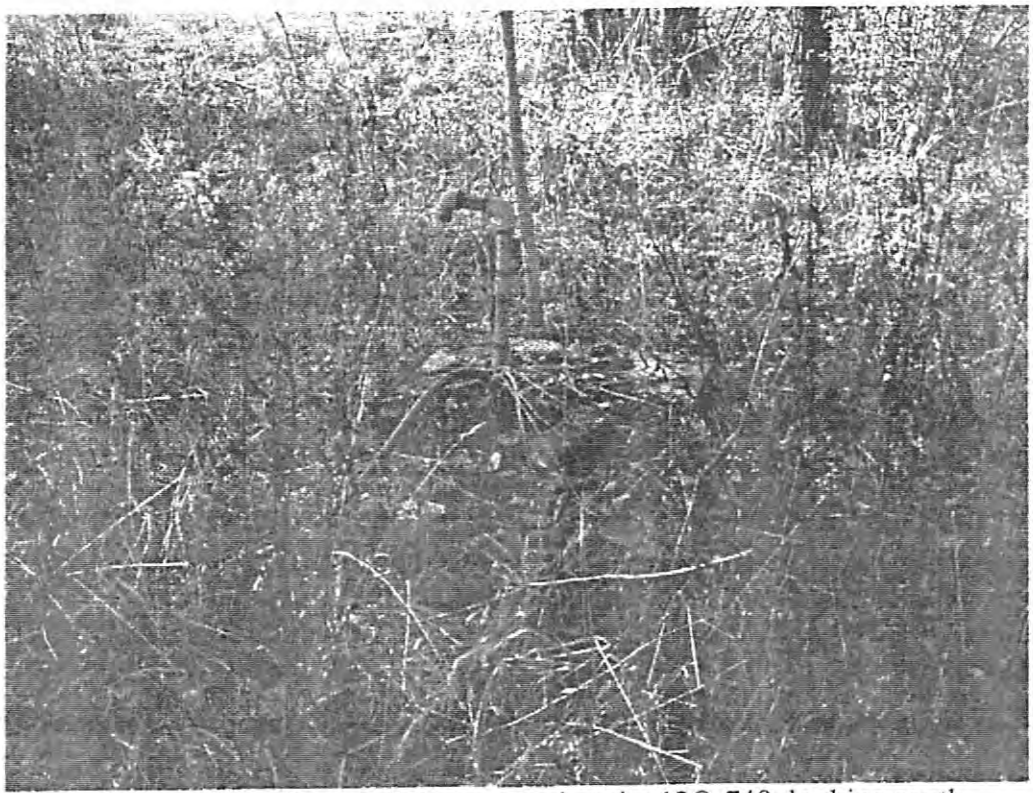


Plate 12: View of the well documented at site 12Or748, looking south.

Plate 13: View of the root cellar documented at site 12Or748, looking northeast.

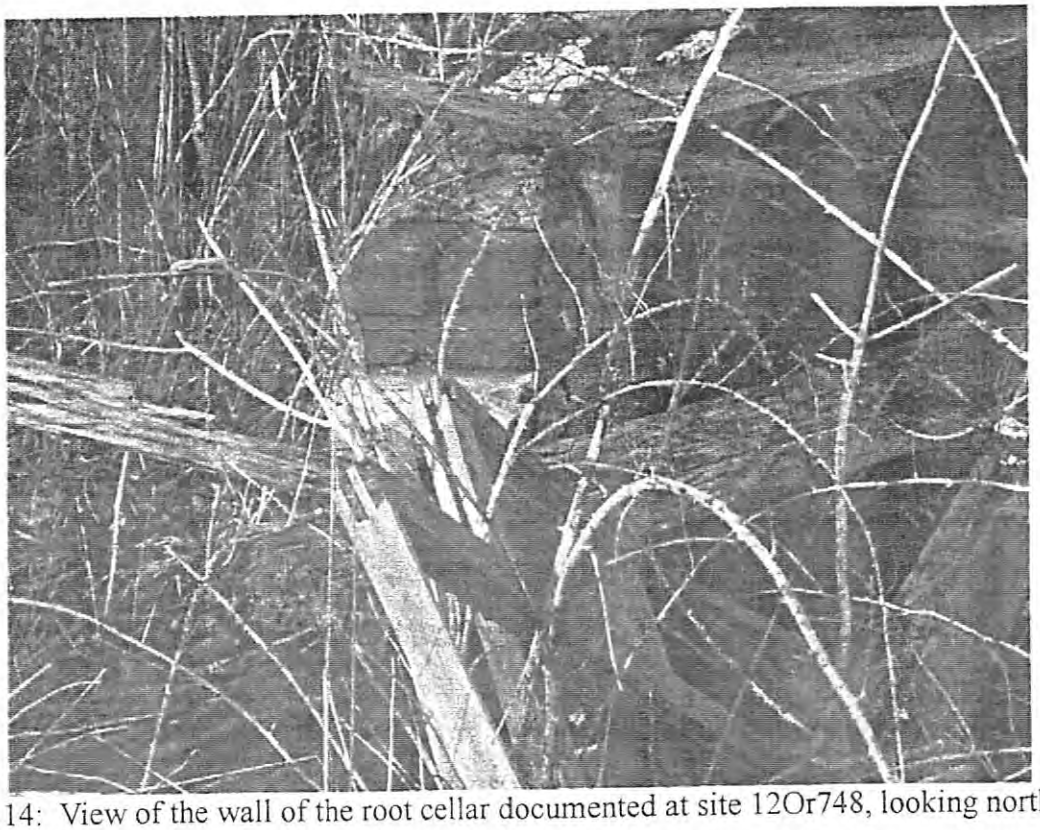


Plate 14: View of the wall of the root cellar documented at site 12Or748, looking northeast.

Collapsed Building: This feature, which measures 2 m (north-south) by 2 m, is located east of the house foundation (Figure 15). An outbuilding, the purpose of which could not be determined, had collapsed at this location (Plate 15).

Outhouse: This feature is located northeast of the collapsed building (Figure 15) and rests on the ground surface. The feature has a wood frame construction with wooden planks for siding and a corrugated metal roof (Plate 16). Visual examination of the feature's interior indicates that it is of the two-seater variety, with the seats constructed from wood planks. The outhouse measures 1 m (north-south) by 1 m.

Shed: This feature is situated near the center of the site and northwest of the outhouse (Figure 15). The shed, which measures 3.5 m (northeast-southwest) by 8 m, has a wood frame construction and the northeastern wall has partially collapsed. The walls consist of wood planks, the roof consists of corrugated metal (Plate 17), and the foundation consists of a pier foundation made from cut and dressed limestone blocks.

Barn: This feature, which measures 7 m (northeast-southwest) by 3.5 m, is situated northeast of the shed (Figure 15). The barn is a wood frame construction with the walls consisting of wooden planks, while the roof consists of corrugated metal (Plate 18). The foundation consists of a pier foundation from cut and dressed limestone blocks. Visual inspection of the feature indicates that the southeastern wall has collapsed.

Plate 15: View of the collapsed building documented at site 12Or748, looking south.

Plate 16: View of the outhouse documented at site 12Or748, looking east.

Plate 17: View of the shed documented at site 12Or748, looking northeast.

Plate 18: View of the barn documented at site 12Or748, looking southeast.

Foundation remnant: The feature, which measures 8.5 m (north-south) by 3.5 m, is located in the northern section of the site (Figure 15). Visual inspection of this feature indicates that it consists of cut and dressed limestone blocks that would have been the pier foundation of a building (Plate 19), probably a shed. An examination of the area did not encounter the building that rested on top of the foundation, or its remains. This would indicate that the building has been moved.

Silo: This feature is located north of the foundation remnant (Figure 15). Visual inspection of the silo indicated that it is approximately 1.5 m in diameter and 3 m in height. The silo was constructed from mortared cinder blocks (Plate 20). An examination of this feature encountered a square hollow shaft located on the western wall (Plate 21). The shaft was constructed from poured cement. The shaft measures .5 m (north-south) by .5 m

As previously noted, only the southern edge of site 12Or748 will be impacted by the proposed project. Shovel probes in this area did not encounter a subsurface in situ cultural horizon, and the data collected from these shovel probes indicates that it is unlikely that a subsurface in situ cultural horizon is situated in this section of the site. As a result of this, it is recommended that no further work should be undertaken in this section of site 12Or748. However, if the project area expands beyond its present boundary, or if a future project impacts the site, then further archaeological investigations (Phase Ib) will need to be undertaken to determine the site's potential for inclusion on the NRHP.

Plate 19: View of the foundation remnants documented at site 12Or748, looking north-northeast.

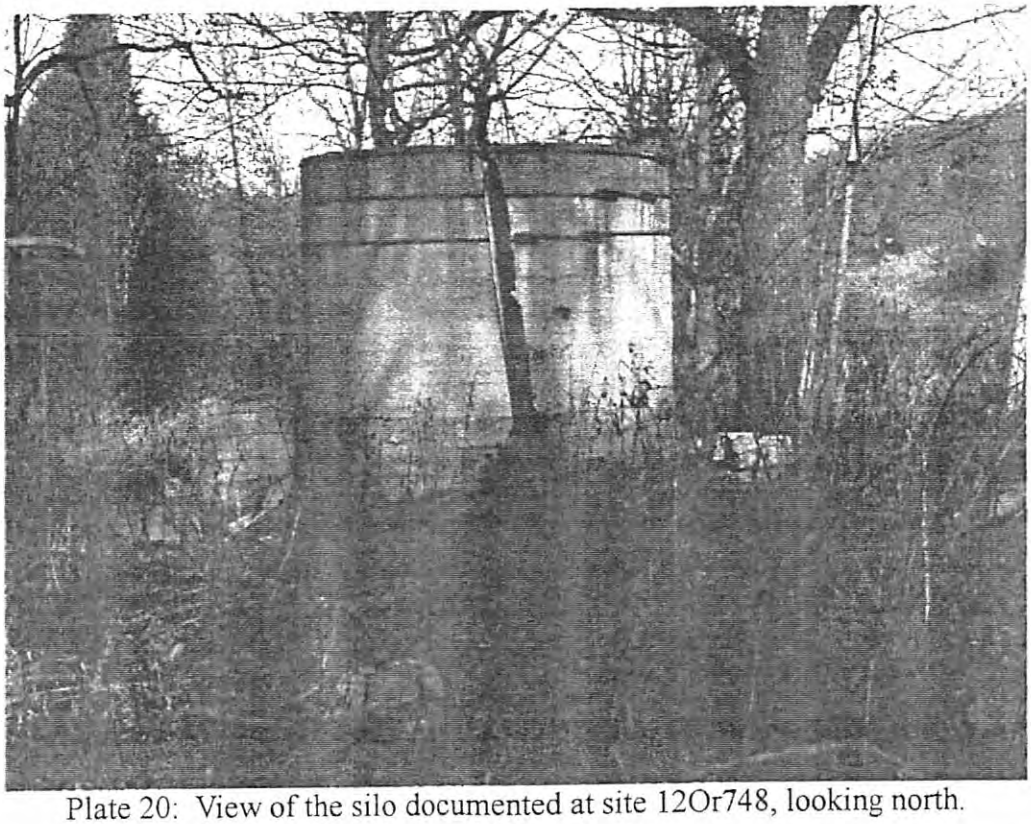


Plate 20: View of the silo documented at site 12Or748, looking north.

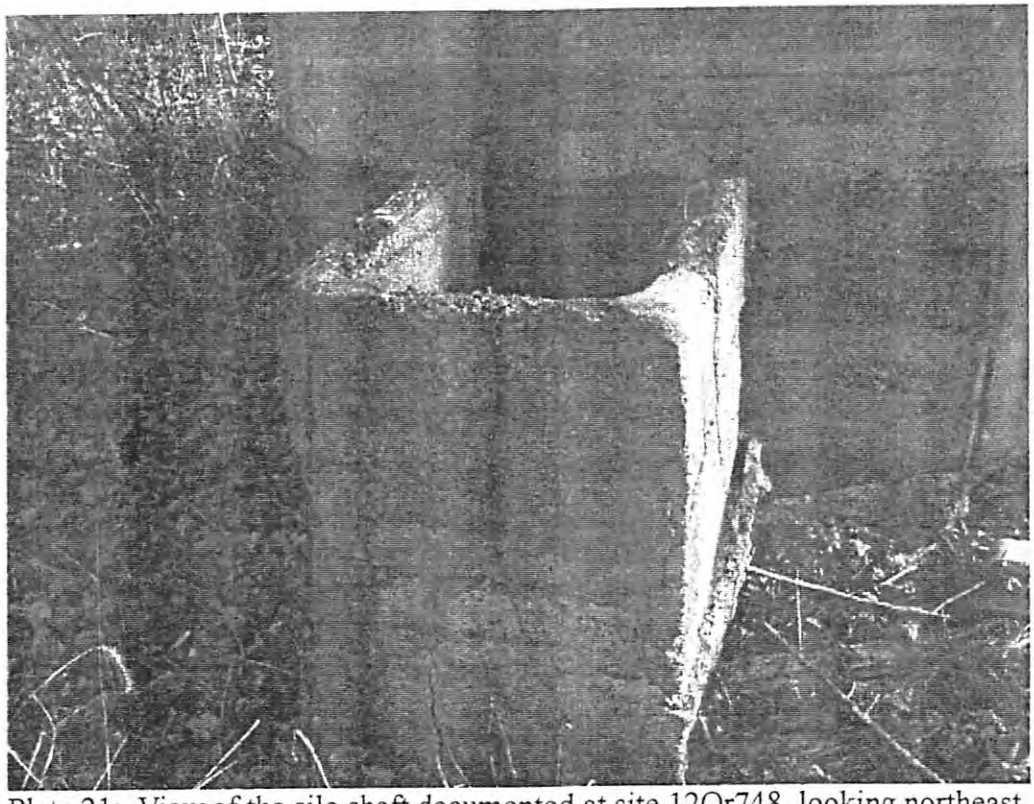


Plate 21: View of the silo shaft documented at site 12Or748, looking northeast.

This site was documented during the visual inspection of a steep slope in the woods with 0 percent visibility (Figure 5). Due to the steepness of the slope, shovel probes were not excavated around the feature. A review of the USGS French Lick quadrangle (7.5' topographic map) did not indicate the presence of a building at site 12Or749. As a result of this, the site consists of a foundation remnant.

The site consists of the remains of a root cellar that was constructed from dried-laid cut and dressed limestone (Plate 22). The depth of the cellar is approximately 2 m, while the walls are .5 m thick. The dimensions of the walls are 6.5 m for the north wall, 10 m for the east wall, 3.5 m for the south wall, and 5.5 m for the north walls southern extension (Figure 16). Visual inspection of the cellar indicates that it opened to the west and US Highway 150/State Road 56.

It is believed that further archaeological work on site 12Or749 will not provide data that will increase our understanding of the site or the history of the area. As a result of this, the site fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on site 12Or749.

Plate 22: View of cellar foundation documented at site 12Or749, looking east.

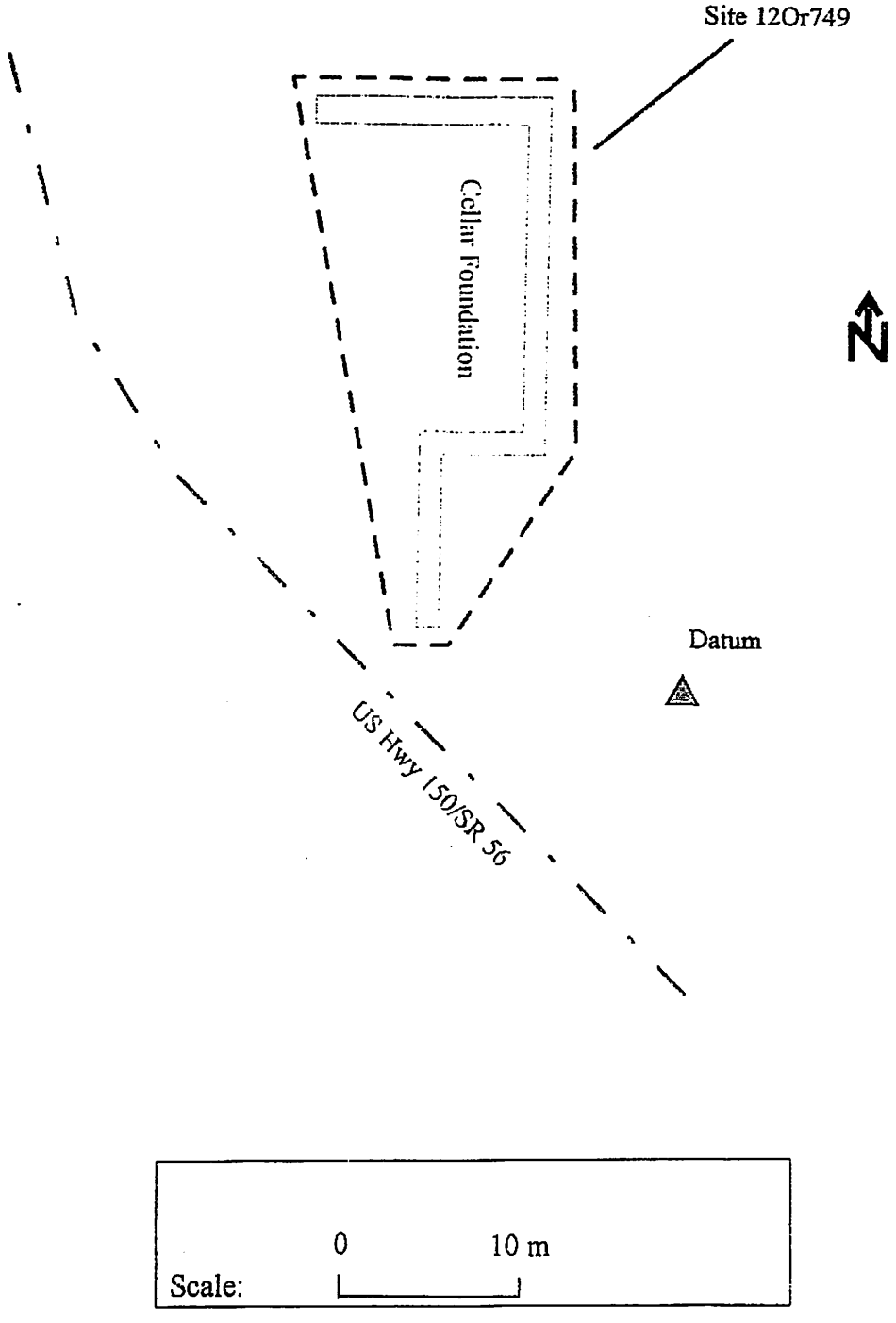


Figure 16: Schematic map of site 12Or749.

This feature was documented during the visual inspection of the project area. The site consists of a homestead that is situated in a cut into the slope (Figure 5). Since the house has been cut into the bedrock, no shovel probes were excavated in the vicinity of the site. An examination of the USGS French Lick quadrangle (7.5' topographic map) documents a building at the location of site 12Or750.

Two features, a house and shed, were documented at the site (Figure 17). These features are discussed below, beginning with the house. The site is interpreted as a homestead.

House: This feature is located in the eastern section of the site (Figure 17). The house appears to consist of a prefabricated house. The siding consists of vinyl siding and horizontal wood boards, with an asphalt-shingled roof (Plate 23). The foundation consists of a cinder block pier foundation. Visual inspection of the house indicates that it has a front porch that faced to the south and US Highway 150/State Road 56.

The dimensions of the house are 9 m (north-south) by 17 m. The porch measures 1 m (north-south) by 5 m. Poured cement step are located on the west wall of the porch.

Shed: This feature is located in the western section of the site (Figure 17). The shed has vinyl siding, a cinder block pier foundation, and an asphalt-shingle roof (Plate 24). The dimensions of the shed are 3 m (north-south) by 13 m.

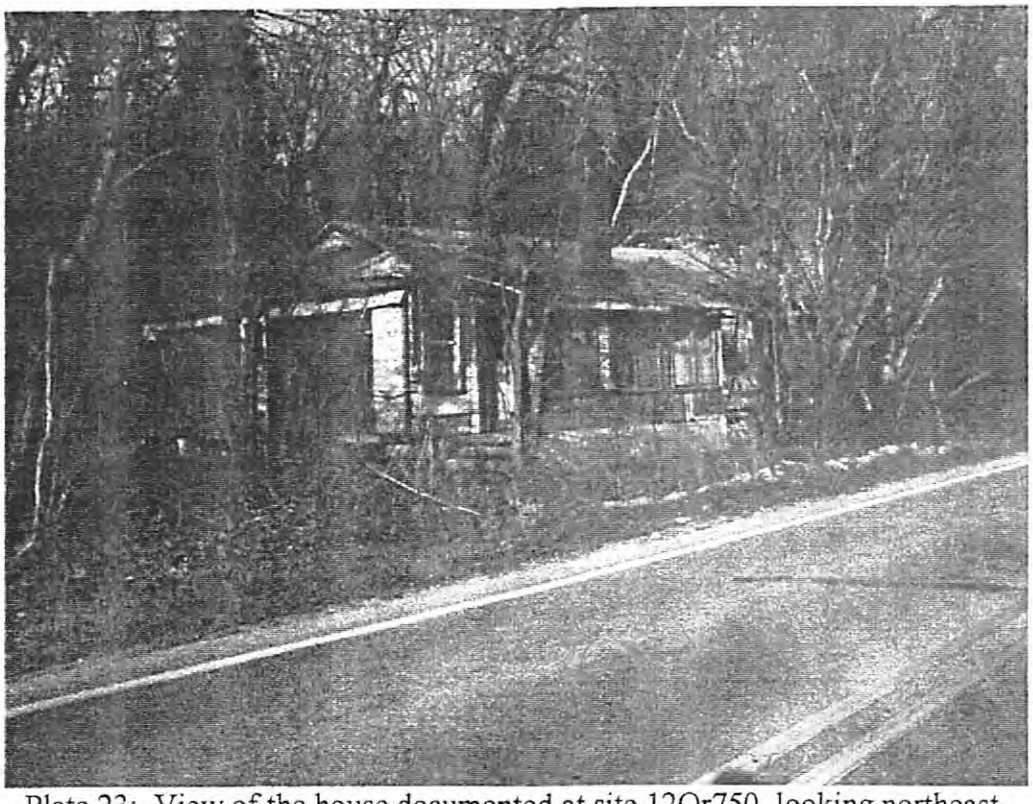


Plate 23: View of the house documented at site 12Or750, looking northeast.

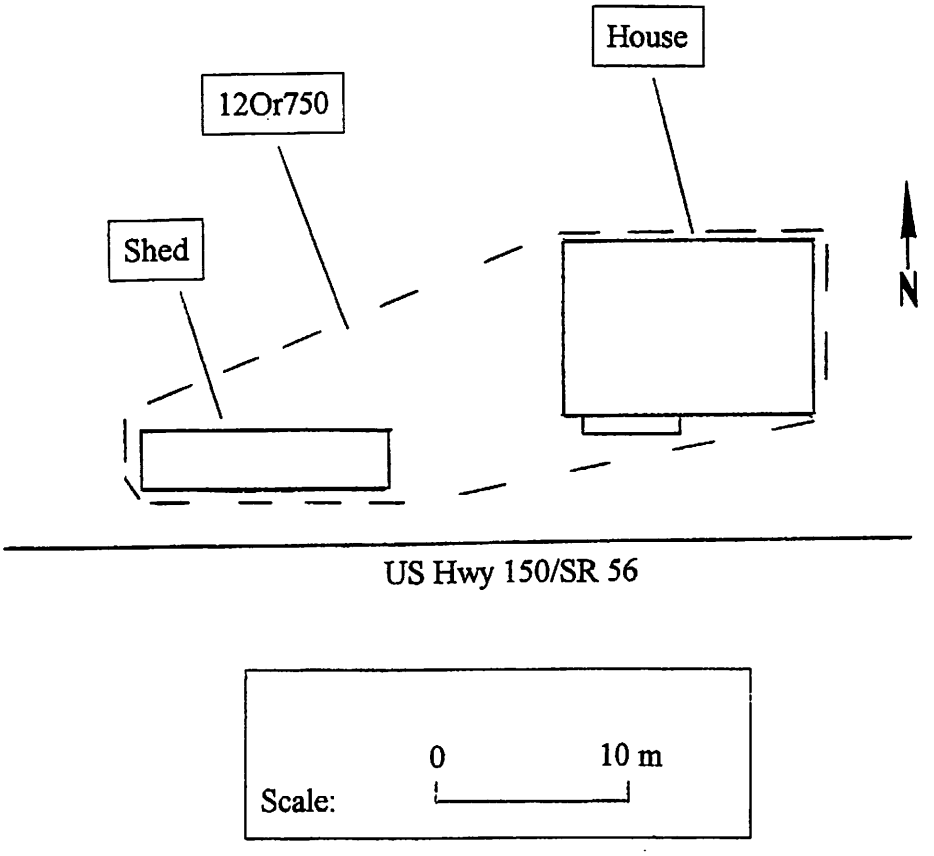


Figure 17: Schematic map of site 12Or750.

Plate 24: View of the shed documented at site 12Or750, looking west-northwest.

Since the site has been cut into the bedrock, this would preclude the presence of subsurface in situ cultural features. Also the age of the site, which is fairly recent (i.e., less than 50 years) in age, would indicate that the site is not eligible for inclusion on the NRHP. As a result of this, it is recommended that the site is not eligible for inclusion on the NRHP. No further work is recommended on site 12Or750.

SUMMARY AND CONCLUSIONS

In November 2002, Butler, Fairman, and Seufert Consulting Engineers contracted Archaeological Consultants of the Midwest to undertake a Phase Ia reconnaissance survey for the proposed rehabilitation of United States (US) Highway 50/Indiana State Road (SR) 56 (INDOT Number STP-024-4 (), Des. Number 9804680) in Orange County, Indiana. The project area begins at the intersection of US Highway 50 and SR 56, just east of the town of Prospect, French Lick Township, and terminates just west of the town square in Paoli, Paoli Township, Orange County, Indiana.

Soil coring and shovel probing on the floodplain indicates that most of the floodplain has the potential for buried cultural horizons. As a result of this, it is recommended that a Phase Ic investigation needs to be undertaken on most of the floodplains situated within the project area.

A total of 13 sites were documented during this investigation (12Or738 to 12Or750). These consisted of three isolated finds, five lithic scatters, one homestead, one farmstead, one foundation remnant, one historic scatter, and one structural remnant.

Analysis of the sites indicates that except for sites 12Or740 and 12Or748, it is believed that further work on the remaining 11 sites (12Or738, 12Or739, 12Or741 to 12Or747, and 12Or749 to 12Or750) will not provide data that will increase our knowledge of the history/prehistory of the area. As a result of this, these sites fail to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on these sites.

Site 12Or740 appears to have been a lithic workshop with the primary lithic material utilized at the site consisting of St. Louis chert from Kentucky. This would indicate that the site was utilized in the Paleoindian and/or Early Archaic periods of prehistory. It is believed that further work on site 12Or740 will provide data that will increase our understanding of the prehistory of the area. As a result of this, the site is potentially eligible for inclusion on the NRHP. As a result of this potential, it is recommended that further work (Phase II) needs to be undertaken prior to any construction activities.

The project area only traverses the southern edge of site 12Or748. In this section of the site, it is believed that further work on this section of the site will not provide data that will increase our knowledge of either the site, or the history of the area. As a result of this, this section of site 12Or748 fails to meet the minimum criteria for inclusion on the NRHP. No further work is recommended on this section of site 12Or748. However, if the site is impacted by future construction, then further work (Phase Ib) will need to be undertaken on the site in order to better determine if the site is potentially eligible for inclusion on the NRHP.

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APPENDIX A

Schwegman's (2002) Records Check report

ARCHAEOLOGICAL RECORDS REVIEW AND RECOMMENDATIONS, INDOT PROJECT STP-024-4 ( ), DES. NO. 9804680, PROPOSED ROAD REHABILITATION US 150/STATE ROUTE 56 AND STATE ROUTE 37 FROM PROSPECT TO MITCHELL, ORANGE AND LAWRENCE COUNTY, INDIANA

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Indiana State University Anthropology Laboratory
Cultural Resources Management Report #02-24

ARCHAEOLOGICAL RECORDS REVIEW AND RECOMMENDATIONS, INDOT PROJECT STP-024-4 ( ), DES. NO. 9804680, PROPOSED ROAD REHABILITATION US 150/STATE ROUTE 56 AND STATE ROUTE 37 FROM PROSPECT TO MITCHELL, ORANGE AND LAWRENCE COUNTY, INDIANA

Project and Location

INDOT proposes road improvements along US 150 between Prospect and Paoli (14.5 km), in Orange County, as well as improvements north of Paoli along State Routes 56 and 37 toward Mitchell (18.5 km) in Lawrence County, Indiana. Butler, Fairman, & Seufert Consulting Engineers ("BF&S") have been retained to prepare plans for the project. This project has been divided into 5 segments. This document deals with the archaeological records review for four of the segments, numbered 2-5, with segment 1 being covered in a separate document. A general description of each segment will be given and all proposed changes to existing road parameters will be described.

Segment 2:
Segment 2 extends from east on US 150/SR 56 from Prospect to Indian Boundary Road (CR 225 West) for a distance of 11.3 km (7 mi). The existing right-of-way in area is generally 9.1 m (30ft) on both sides of the centerline. The proposed project will expanded the right-of-way to between 20 m (66 ft) and 40 m (131 ft) from the centerline. This expansion will impact an additional 22.3 ha (55 acres) of land. Land-use estimates for this area include 3.1 ha (7.7 acres) of residential area, 13.7 ha (33.9 acres) of agricultural land, and 5.5 ha (13.6 acres) of natural/wooded property. At least two small structures will be replaced within this segment as well as the limited shaping of creek banks upstream and downstream from proposed structure sites. The use of temporary runarounds will be required. Segment 2 begins in the east half of Section 27 T2N R2W, Northwest Twp, and runs east through portions of Sections 25 and 26 of that township. The segment then continues through portions of Sections 30, 29, 32, 33, and 34 of T2N R1W, Orangeville Twp., Orange Co., IN. All portions of this segment are show on USGS 7.5' French Lick topographic quadrangle map (Figure 1).

Segment 3
Segment 3 begins at Indian Boundary Road (CR 225 West) and extends east, on US 150/SR 56, 3.2 km (2 mi) to the Paoli Town Square. The existing right-of-way is generally 9.1 m (30ft) on both sides of the centerline. The proposed right-of-way is variable in width but will require an additional 1.62 ha (4 acres) in addition to the increased right-of-way at the US 150/SR56 and Willow Creek Road intersection. New proposed right-of-way land includes 0.13 ha (0.3 acre) of residential, 0.75 ha (1.9 acres) of commercial, 0.61 ha (1.5 acres) of natural, and 0.13 ha (0.3 acre) of agricultural property. In addition some temporary right-of-way may be needed for sidewalk reconstruction. Only minor bridge work is expected in this segment which includes resurfacing of existing pavement. Segment 3 begins along the east edge of Section 34 and runs through a portion of Section

35, T2N R1W, Orangeville Twp, and extends into portions of Sections 2 and 1 of T1N R1W, Paoli Twp., Orange Co., IN. All portions of this segment are shown on USGS 7.5' Paoli topographic quadrangle map (Figure 2).

Segment 4

Segment 4 begins at the SR 37/Paoli Town Square northern intersection and extends north on SR37 for 2.5 km (1.6 mi). Existing right-of-way in this urban segment varies from 18.2 m to 21.3 m (60-70 ft) on both sides of the centerline. All proposed improvements will be carried out with the existing right-of-way, therefore no additional right-of-way acquisition is expected. Segment 4 begins along the north edge of Section 1 of T1N R1W, Paoli Twp. and extends through portions of Sections 36 and 25, T2N R1W, Orangeville Twp., Orange Co., IN. All portions of this segment are shown on USGS 7.5' Paoli topographic quadrangle map (Figure).

Segment 5

Segment 5 begins 2.5 km (1.6 mi) north of Paoli Town Square and extends north on SR37 for 16.1 km (10 mi) through the town of Orleans and ends at Lawrence County Road (1000 South). The existing right-of-way varies. South of Orleans it is typically 9.1 m (30ft) on both sides of the centerline. North of Orleans to the end of the segment the right-of-way is generally 15.2 m (50 ft) on either side of the centerline. The proposed right-of-way is approximately 30 m (98 ft) to 15 m (49 ft) on both sides of the centerline. In addition a four lane passing section is to be added with a right-of-way of between 20 m (66 ft) and 40 m (131 ft) from the centerline. The expanded right-of-way will require an additional 12.65 ha (31.3 acres) of property. This additional land includes 4.16 ha (10.3 acres) of residential, 2.22 ha (5.5 acres) of commercial, and 6.28 ha (15.5 acres) of agricultural property. In addition approximately 1.3 ha (3.2 acres) will be required for the four lane passing section. Segment 5 begins at the SE corner of Section 25, T2N R1W, Orangeville Twp., Orange Co., IN. and runs through portions of Sections 30 and 19, T2N R1E, Orleans Twp.. From the north half of Section 19 to just south of the town of Orleans the segment runs directly along the Second Principal Meridian. South of Orleans the segment turns to the east and runs through portions of Sections 31, 30, 19, and 18, T3N R1E, Orleans Twp and then extends northwest through portions of Section 12 and ends in the south half of Section 1, T3N R1W, Marion Twp., Lawrence Co. IN. (Figure).

Archaeological Records Review

A review of the files maintained by this facility and the Indiana Division of Historic Preservation and Archaeology ("DHPA") found 23 archaeological sites within 400m of the proposed project limits. Included in these sites are two, 12Or552 and 12Or553, which will potentially be affected by the proposed work. Both of the affected sites are located along Segment 5 north of Paoli.

Potentially Affected Sites

12Or552

12Or552 is described as a potentially National Register eligible prehistoric Lost River chert workshop and quarry located along the north bank of the Lost River (Beard and Moffatt 1993). This large scatter of chert tools and debitage covers a large oval area approximately 550 m x 100 m and is located on both the east and west side of SR 37. Legally the eastern extent of the site is found in N1/2, SW1/4, NW1/4, Sec. 18, T2N R1E. The western limits of the site is located in NE1/4, NE1/4, SE1/4, NE1/4, Sec. 13, T2N R1W, Paoli quadrangle. (Figure 6). The site was plowed at the time of survey with no visible midden or features noted. A total of 152 prehistoric and 3 historic artifacts were recovered during the initial survey of 12Or552 (Beard and Moffatt 1993). These artifacts included:

Prehistoric

1	Late Archaic side-notched projectile point (Lost River chert)
1	Point fragment (Lost River chert)
1	Large bifacial scraper (Lost River chert)
5	Utilized flakes (Lost River chert)
112	Debitage (Lost River chert)
1	Small thumbnail scraper (Wyandotte chert)
11	Debitage (Wyandotte chert)
1	Projectile point mid-section (Jeffersonville chert)
4	Debitage (Jeffersonville chert)
1	Large biface (Ferdinand chert)
3	Debitage (Ferdinand chert)
1	Utilized flake (Harrodsburg chert)
2	Debitage (Harrodsburg chert)
1	Flake scraper (Holland chert?)
5	Debitage (Holland chert?)
1	Biface (Paoli chert?)
1	Hammerstone

Historic

1	Sherd of Flow Blue ware
2	Sherds White ware

According to the project plans, the site is located along the proposed four lane passing section expansion. Along this section the right-of-way be expanded from the current 9.1 m (30 ft) to 20 m (66 ft) on both sides of the centerline. This proposed expansion would pose a significant threat to a large section of 12Or552.

12Or553

A scatter of prehistoric cultural lithic material was designated 12Or553 (Beard and Moffatt 1993).

This site is located on the west side of SR 37 just north of the dry river bed of Lost River and was estimated to begin approximately 11 m from the centerline. Material collected from the site included one flake and two blocky fragments of Lost River chert which were recovered from an area approximately 95 m X 40 m. Legally the site is located in the SE1/4, SE1/4, NE 1/4, SE 1/4 of Sec. 13, T2N R1W, Paoli quadrangle (Figure 5).

Project plans in the site area will involve an expansion of the right-of-way from the current 9.1 m (30 ft) to 15 m (49 ft) on both sides of the centerline. This expansion will possibly impact 12Or553 based upon its currently defined location.

Sites within 400m of the Proposed Project

Along with the two archaeological sites located within the project limits, 21 other sites have been identified within 400m of project limits. All of these sites have been assigned prehistoric cultural affiliation. None of these sites should be impacted by the proposed project. Of these sites 13 were reported with very limited descriptive information on the site form. The following sections will describe the sites with more detailed forms first then discuss the sites with less information. For the location of all the sites refer to Figures 2-9.

Sites with detailed information

12Or286 is located approximately 280m west of SR37 along Segment 5 of the proposed project in the NW 1/4, of Sec. 7, T2N R1E, Mitchell quadrangle (Figure 6). Surface material collected from the site included five secondary chert flakes and one projectile point identified as an Early Archaic MacCorkle Stemmed.

12Or287 is also found in Segment 5 approximately 350m west of SR37 in the NW 1/4, of Sec. 7, T2N R1E, Mitchell quadrangle (Figure 6). Cultural material associated with the site included 12 secondary flakes and one de-cortication flake. No cultural affiliation could be determined for this site.

12Or459 is an isolated Steuben Cluster projectile point of unidentified chert. Steuben points are associated with late Middle Woodland to early Late Woodland occupations. This site is located in the NE 1/4, of Sec. 32, T2N R1W, French Lick quadrangle, along Segment 2 approximately 250m south of US 150 (Figure 3).

Site 12Or471 is located about 310m northwest of the western Hospital Road terminus, along Segment 3 (SW¼ Sec. 35, T2N R1W, Paoli quadrangle), and about 60m southwest of US 150 (Figure 4). Early Archaic St. Charles material was recovered from the site.

Site 12Or473 has been assigned Early Archaic cultural affiliation based upon the presence of a Lost Lake projectile point from the Randall Jones collection, the only artifact reported from the site. This

site is located approximately110m south of US 150 in Segment 2 of the proposed project. The general legal location of the site is the NE 1/4 of Sec. 25, T2N R2W, French Lick quadrangle (Figure 2).

Site 12Or549 is located 1300m south of the Lawrence and Orange county line, and approximately 40m west of SR 37 (Segment 5), in the SW 1/4, of Sec. 19, T3N R1E, Mitchell quadrangle (Figure 8). Cultural material reported from the site consists of two flakes of Lost River chert (Beard and Moffatt 1993). No cultural affiliation could be determined for this site.

Another site, 12Or551, is defined based upon an isolated core of Lost River chert recovered during surface survey (Beard and Moffatt 1993). The site is mapped approximately 50m west of SR 37 along Segment 5 of the proposed work. The legal location of 12Or551 is in the SE 1/4 of Sec. 12, T2N R1W, Paoli quadrangle (Figure 6). No cultural affiliation could be determined for this site.

Additionally, site 12Or610 is located about 90m east of SR 37, in Segment 5 (NW corner Sec. 30, T2N R1E, Paoli quadrangle), and is described as an isolate-flake site (Figure 5). No cultural affiliation could be determined for this site.

Sites with limited information

All the site forms with limited information were completed by J.A. Mohler in 1967. The following discussion summarizes all the available data for each site. All of these sites are located on the French Lick quadrangle map.

12Or387 is reported as a possible Fort Ancient site located in SW 1/4 of Sec. 30, T2N R1W, Orangeville Twp.(Figure 2). Ceramics are the only material indicated. Site 12Or388 is mapped over an extensive area and is indicated to be a "concentration of sites" on the form. Ceramics of un-indicated affiliation is the only cultural material noted. The general legal location of this site is the SE 1/4 of Sec. 30, T2N R1W, French Lick Twp. (Figure 3). 12Or389 is reported to be located in the SW 1/4 of Sec. 30, T2N R1W, Orangeville Twp. (Figure 2). No indication of associated cultural material is given. Another possible Fort Ancient site, 12Or390, is located in the SE 1/4 of Sec. 30, T2N R1W, Orangeville Twp. (Figure 3). Ceramics are the only material indicated. Ceramics were also reported to occur at 12Or391 which is located in the NE 1/4, of Sec. 32, T2N R1W, Orangeville Twp. (Figure 3). Site 12Or392 has no reported cultural material and is located in SW 1/4, NW 1/4, NW 1/4 of Sec. 33, T2N R1W, Orangeville Twp. (Figure 3). 12Or393 is located in the NE 1/4 of Sec. 32, T2N R1W, Orangeville Twp. (Figure 3) No cultural material is reported. 12Or401 is reported in the SE 1/4 of Sec. 23, T2N R2W (Figure 2) with no associated cultural material indicated. Another site with no cultural material indicated is 12Or402 which has a reported location in the NE 1/4 of Sec. 25, T2N R2W, Northwest Twp. (Figure 2). Site 12Or403 is reported to be in the NW 1/4 of Sec. 26, T2N R2W, with no other information available (Figure 2). 12Or406 is located within the NE 1/4 of Sec. 25, T2N R2W, French Lick Twp. (Figure 2). No cultural material is reported from this site. Ceramics and a possible Fort Ancient cultural affiliation were reported for site 12Or407. The legal location of this site is in the NW 1/4, of Sec. 25, T2N R2W, French Lick

Twp. (Figure 2). And finally site 12Or408 is reported to be located in the NE 1/4, of Sec. 25, T2N R2W, French Lick Twp. (Figure 2).

Other Local Sites

At least 29 other sites have been recorded within a one-mile radius from the project corridor. Most of these sites occur adjacent to Paoli or to the west along US 150 (Segment 2). No information other than locational data are available from this facility.

A highly significant site located on the Paoli Quad that is potentially eligible for the National Register of Historic Places is the Cox's Woods site, 12Or1. It is situated along the left bank of Lick Creek, in the northeast corner of the Pioneer Mothers Memorial Forest about two kilometers southeast of the Paoli Town Square, in the SE¼ SW¼ Sec. 6. T1N R1E, Paoli Twp. It is an Oliver phase village surrounded by a stockaded earthen embankment which was recently excavated by Indiana University (Redmond & McCullough 1996).

Three Historic structures located in Paoli are listed on the NRHP. These are: the Thomas Newby Braxtan House (built 1893) at 210 N. Gospel St.; the Thomas Elwood Lindley House (built ca. 1869) on Willow Creek Road; and the Orange County Courthouse (built 1847), on the Town Square. Additionally, the NRHP recognizes the Paoli Historic District (built between 1840-1940), which is roughly bounded by W. Fifth St., Lick Creek, NE Third St., and Railroad St.

Currently, this facility shows 60 archaeological sites to be recorded on the Paoli quad., 41 sites on the Mitchell quad, and 29 sites on the French Lick quad. Over 520 sites have been documented in Orange County to date. As less than 1% of the county has been systematically examined for such resources, this figure reflects but a fraction of those that potentially exist

Even with the high number of previously recorded sites in the region, it is not likely that the entirety of the project has been examined by professional archaeologists. Given the density of local sites, the potential for discovery of unrecorded archaeological sites is provisionally considered high.

Previous Archaeological Surveys

The proposed bridge replacement area on US 150 over Lost River in the N ½ of Sec. 26, T2N R2W, French Lick quadrangle,(within Segment 2) has undergone extensive archaeological reconnaissance (Jackson 1997, Erickson 1997, Holycross and Stafford 2000). An initial Phase I survey of the area indicated a high potential for buried cultural horizons (Jackson 1997). A subsequent geoarchaeological subsurface study in the area, using a Giddings trailer-mounted hydraulic probe, further indicated the area has the potential to contain buried in-situ cultural deposits (Holycross and Stafford 2000).

A number of smaller-scale archaeological surveys have also been conducted along or immediately adjacent to the proposed project limits. These include: a six mile long survey which extended 100ft

beyond the present right-of-way of SR 37, beginning approximately 300m northwest of the project limits(SW 1/4 of Sec. 1, T3NR1W, Mitchell quadrangle) and ending just south of the US 50/SR 37 intersection (SW 1/4 of Sec. 3, T4NR1W, Bedford West quadrangle) (Tomak 1983); an eight acre sewage treatment project south of Orleans and east of SR 37 in the SW 1/4 of Sec. 31, T3N R1E, Mitchell quadrangle (Stafford 1988); a water line survey to the southwest of US 150 in the SE 1/4 of Sec 34 and SW 1/4 of Sec. 35, T2N R1W, Paoli quadrangle (Baltz 1988); a 3.66 acre survey for the Oak Park Apartment project on the south edge of Orleans just east of SR 37 in the NW 1/4 of Sec. 31, T3N R1E, Mitchell quadrangle (Beard 1992); two bridge replacements on US 150 over Lick Creek, one in the NW 1/4 of Sec. 33, T2N R1W, French Lick quadrangle (Beard 1993a) and the other in the NE 1/4 of Sec. 25, T2N R2W, French Lick quadrangle (Beard 1993b); a survey for waterline extensions which ran along the west side of SR 37 in Sec. 12 and 13, T2N R1W, Paoli quadrangle(Beard and Moffatt 1993); another bridge replacement reconnaissance on US 150 over Lick Creek in the NW 1/4 of Sec. 33, T2N R1W, French Lick quadrangle (Adderley 1995); a survey for proposed intersection improvement on SR 37 at Martin Road south of Orleans in the SW 1/4 of Sec. 31, T3N R1E, Mitchell quadrangle (Holycross 1998); a ca. 18 acre reconnaissance for an INDOT subdistrict complex northeast of US 150/SR 56 in the NW¼ of Sec. 35, T2N R1W, Paoli quadrangle (Gibson & Plunkett 1999); and a proposed road improvement on US 150/ SR 56, at Prospect, just west of the project area in the E ½ of Sec. 27, T2N R2W, French Lick quadrangle (Kuns and Pope 2001).

Natural and Cultural Setting

The project area is located in the Crawford Upland physiographic zone (Schneider 1966). It is characterized as an immaturely dissected plateau with narrow interfluves, deeply incised v-shaped valleys, and relief of up to 350'. Landforms of the Paoli Quad are typical of this zone, as it is dominated by rugged ridge-and-valley topography. The Chester Escarpment, which bounds the karstic Mitchell Plain, terminates about 7km to the east. The western halves of Alternate 1 and the Hospital Road corridor generally follow small tributary valleys leading from ridge flanks; the eastern halves proceed cross-country over the rugged ridge terrain. Lick Creek serves as the primary local drainage, which meets its confluence with Lost River about 15 km to the west.

The ridge capstone consists of resistant limestone, sandstone, and shale units of the Mississippian Stephensport Group. The slopes are more easily eroded shales, sandstones, and limestones of the Mississippian West Baden Group. Larger regional valleys are developed in limestones of the Mississippian Blue River Group (Gray et al. 1970). Several chert types of prehistoric significance are incorporated within this lithology. Known or probable deposits of Bryantsville, Haney, Lost River, and Indian Creek chert have been documented in the greater region (Bassett and Powell 1984; Cantin 1994), and in fact were locally documented by Baltz (1984).

The area remained unglaciated during the Pleistocene, and thus direct upland landscape modification was minimal. However, a veneer of loess mantles much of the upland landscape, into which soils have developed. Certain valleys were impounded in the Pleistocene, which resulted in the formation

and deposition of lacustrine deposits (Thornbury 1950). However, in this region, the valleys incorporate thick sequences of more recent alluvium. Soils of the greater project area are of the Wellston-Zanesville-Berks and Crider-Caneyville-Frederick associations (Wingard 1984). Such soils are described as nearly level to very steep, deep to moderately deep, and moderately well- to well drained. Both associations formed in loess and underlying lithic residuum and are described as alfisols or ultisols. Both classes are typically older, more stable soils in which pedogenesis is mature, as reflected in weathered argillic A-Bt horizonation (Bettis 1992).

Many investigators have addressed the magnitude of ecological succession at the Late Pleistocene/Early Holocene interface through the Middle Holocene (McMillan and Klippel 1981). In a general model applied to the Midwest discussed by McMillan and Klippel (1981), the Wisconsinan glacial mass began to retreat around 14,500 BP. Tundra was found in near proximity to the lead edge of the ice sheet, but a 1000 km band of spruce-dominated boreal forest extended south of this. At this time, winters were warmer and summers were cooler than today. Through time, the character of the forest was dynamic, with more deciduous mesic species encroaching or internally supplanting coniferous types. By 11,000 BP a fully deciduous forest had been established, although it was to be short-lived. It should be noted that this was a time-transgressive phenomenon, so this establishment was at different points for different regions and elevations.

Following this was the Hypsithermal, a warming/drying trend driven by Pacific air masses, which began around 8500 BP, reached its maximum at 7000 BP, and extended to 5100 BP (McMillan and Klippel 1981). During this period, mesic forests were being replaced by more xeric forms, notably prairie, which was sweeping from west to east (Prairie Peninsula expansion, which extended into northwest Indiana). Upland erosion was accelerated and severe, and valleys aggraded rapidly which altered fluvial regimes from braided types to single-channel meandering types (Hajic 1981). As such, oxbows and backwater ponds were formed. Alluvial and colluvial fan deposition commenced as well (Hajic 1981). Upland productivity was diminished as the forests shrank (Brown 1985; Brown and Vierra 1983), thus creating a substantial ecotonal area of forest-edge, which is particularly significant in the distribution of deer, a forest-edge species (McMillan and Klippel 1981). However, there is evidence that bluffslopes remained wooded by xeric species (Brown 1985; Brown and Vierra 1983:173). While the flora of the uplands was displaced, the floodplains and terraces remained wooded by mesophytic and edaphic species and was little affected by the Hypsithermal. The net effect of the Hypsithermal was an increase of the "patchiness" of resources, or the creation of a heterogeneous distribution of resources. Again, as this was a diachronic process, there is a temporal lag which is spatially manifested, from west to east. The Hypsithermal episode diminished by 5100 BP, or in the early Late Holocene/Late Archaic. A climate similar to today was then established.

Presettlement vegetation varied in response to local and regional physiography (Lindsey et al. 1969; Sieber et al. 1989). Much of the Crawford Upland was dominated by climax oak-hickory forests. A significant exception would be in the valleys of major drainages where more mesic communities would have been established, where beech-maple stands would have been more prevalent, and beneath that canopy, a more varied understory composition. On a more local scale, ridge tops and

south- and west-facing slopes would have supported oak-hickory assemblages, while north- and east-facing slopes were more mesophytic. The nearby Mitchell Plain would have supported a mesophytic community as well, and xeric "barrens" were established. The floral community would have provided a range of sustenance resources, including nuts, roots, tubers, berries, shoots, greens, and other fruits.

Most woodland and aquatic fauna native to Indiana would have inhabited this region (Mumford 1969; Sieber et al. 1989). Taxa critical to prehistoric subsistence included deer, raccoon, squirrel, turkey, waterfowl, sundry fish, turtle, and mollusc. Other fauna included various felid, canid, and ursid species. Bison entered the area late in the prehistoric sequence, ca. AD 1600.

The lithic, water, and subsistence resources of the area were capable of supporting moderate to intensive prehistoric occupation. However, archaeological sites do not occur evenly across the landscape, but instead are patterned in relation to specific geomorphic settings and resource locales. These settlement patterns, although distinct for various cultural-temporal manifestations, reflect the adaptive strategies and subsistence systems practiced by prehistoric peoples. As such, the settlement pattern of a particular hunter-gatherer group would be distinct from that of a more sedentary agrarian population, although the settlement patterns between various hunter-gatherer or agrarian groups also vary through time and across space.

Because groups of prehistoric peoples developed a variety of adaptive systems over time in response to changing environmental conditions and the introduction of new technologies, the distribution of sites and site types (e.g., village, hunting camp, lithic workshop, etc.) are expected to reflect these changes. In a generalized model of prehistoric settlement and subsistence, relatively larger base camps and villages would be predicted to occur on floodplain features and blufflines nearer to major drainages, as well as adjacent to upland/interior wetlands. These sites are typically large relative to other contemporary but ancillary sites, and contain midden and pit feature deposits. In addition, the artifactual assemblages are large and represent a wide functional array, which reflects the range of social, political, religious, and domestic activities which occur on-site. Because resources required by the inhabitants of such sites seldom occur in close proximity or are available on a seasonal basis only, it would be necessary for groups to establish smaller, more specialized or task-specific support sites. These camps would be occupied for relatively shorter periods and would not reflect intensive occupation. Consequently, the specialized or limited activity camps often lack significant deposits such as midden or pit features, and the artifactual assemblages are usually limited to few numbers of functionally restricted types. Ancillary camps can occur in a wide variety of settings, but many have been identified in upland contexts near streams. However, because of their short-term and specialized nature, ancillary or similar camps have a potential to provide valuable information to the archaeological record. In certain instances, such sites are considered to be significant and eligible for the NRHP.

All periods of Indiana prehistory (Kellar 1983) are represented by archaeological sites in and adjacent to Orange County (Adams 1946; Munson 1980; Baltz 1986; Sieber et al. 1989; Redmond and McCullough 1993 & 1996). Perhaps most frequently identified are sites of Early Archaic (ca.

8000-6000 BC), late Middle Archaic (ca. 3500-2000 BC), Late Archaic (ca. 2000-1000 BC), and Oliver phase/Upper Mississippian (ca. AD 1000-1400) affiliations. Due to subsistence patterns, a greater representation of the Archaic sites is noted in the uplands; in the bottoms, Oliver phase sites are more frequently identified. However, ancillary sites of each are found over the entirety of the landscape. A full range of site functional types from small short-term camps to more substantial villages, mortuary structures, and specialized extractive sites have been documented in the county.

Two Oliver sites within the general project area region have been recently excavated. The first is the 12Lr329, the Clampitt site (Redmond 1994), located in central Lawrence County. This one acre village site was ringed with at least one stockade, and possibly a second (though it could represent an episode of rebuilding). It was occupied from ca. AD 1276-1433, which is coeval with Fort Ancient groups of southeastern Indiana, and upstream along the Ohio. A large central plaza was defined which was virtually devoid of cultural materials and features, and homesteads were confined to the perimeter of the stockade. Subsistence evidence suggests that a major portion of the diet was based on maze, supplemented by a hunting/collecting economy.

The second site is 12Or1, Cox's Woods site (Sieber et al. 1989; Redmond and McCullough 1996), which is located about one mile east of Paoli, Orange County. It reportedly consisted of an earthen enclosure some 1200' in circumference, and possibly double-walled. Within the enclosure were numerous mounds. Mounds existed outside of the enclosure as well. It was initially test-excavated in the 1940s and 1950s by Jesuit priests from West Baden college, and in the 1990s by Indiana University (Redmond & McCullough 1993 & 1996).

Native Americans of the early Contact period included the Wyandot, Delaware, and Shawnee. Several historic villages have been documented in Orange County. These include King Billy's Village (Shawnee), located near present-day Orangeville, and an unnamed Shawnee village located just east of Paoli, which was occupied in 1788. In nearby Washington County was the Delaware Ox's Village, and a Shawnee winter camp occupied in 1796-7. The land was ceded by the Miami through the Fort Wayne Treaty of 1803. Several early Euroamerican forts were established in the region as well. In Orange County was Maxwell Fort, near present-day Leipsig. Flinn Guthrie Fort was established in 1811 near Leesville, Lawrence County. A massacre occurred here in 1813. Ft. Defiance was constructed in Jackson county in 1812. Lick Fort and Becks Fort were located in Washington County. Spring Mill, in Lawrence County, was founded in 1815, and served as a trading post. Paoli was designated as Orange County seat in 1816.

Recommendations

An archaeological reconnaissance of the entire proposed project corridor is recommended with the exception of those areas previously examined and found to hold no archaeological resources. The numerous archaeological sites that have been reported in and around the project area, especially a Register-eligible site--12Or1 (Cox's Woods)--serves to underscore the need for such a reconnaissance. The reconnaissance should be conducted within the State and Federal Guidelines. Site 12Or552, identified within the proposed corridor of impact, is a *potentially* significant and

Register-eligible site. While a quantity of artifactual material was recovered from the site, the site area is quite extensive so the relative artifact density may not be as great as initial impressions may lead one to believe. The disposition of the higher material densities relative to the proposed project right-of-way is also in need of clarification. It is possible that site 12Or552 is an amalgam of several smaller sites (or sequential series of reoccupations) with "smeared" site boundaries, given the considerable area involved. As such, we recommend to re-examine this site at the Phase Ia level under favorable survey conditions (i.e. during a period of high surface visibility). This assessment may determine that more intensive investigations are warranted (i.e. Phase II test excavation). Alternatively, the project plans could be altered to avoid disturbance to the site. No further investigations of 12Or553 are recommended at this time beyond re-identification of it through the normal course of reconnaissance for the project.

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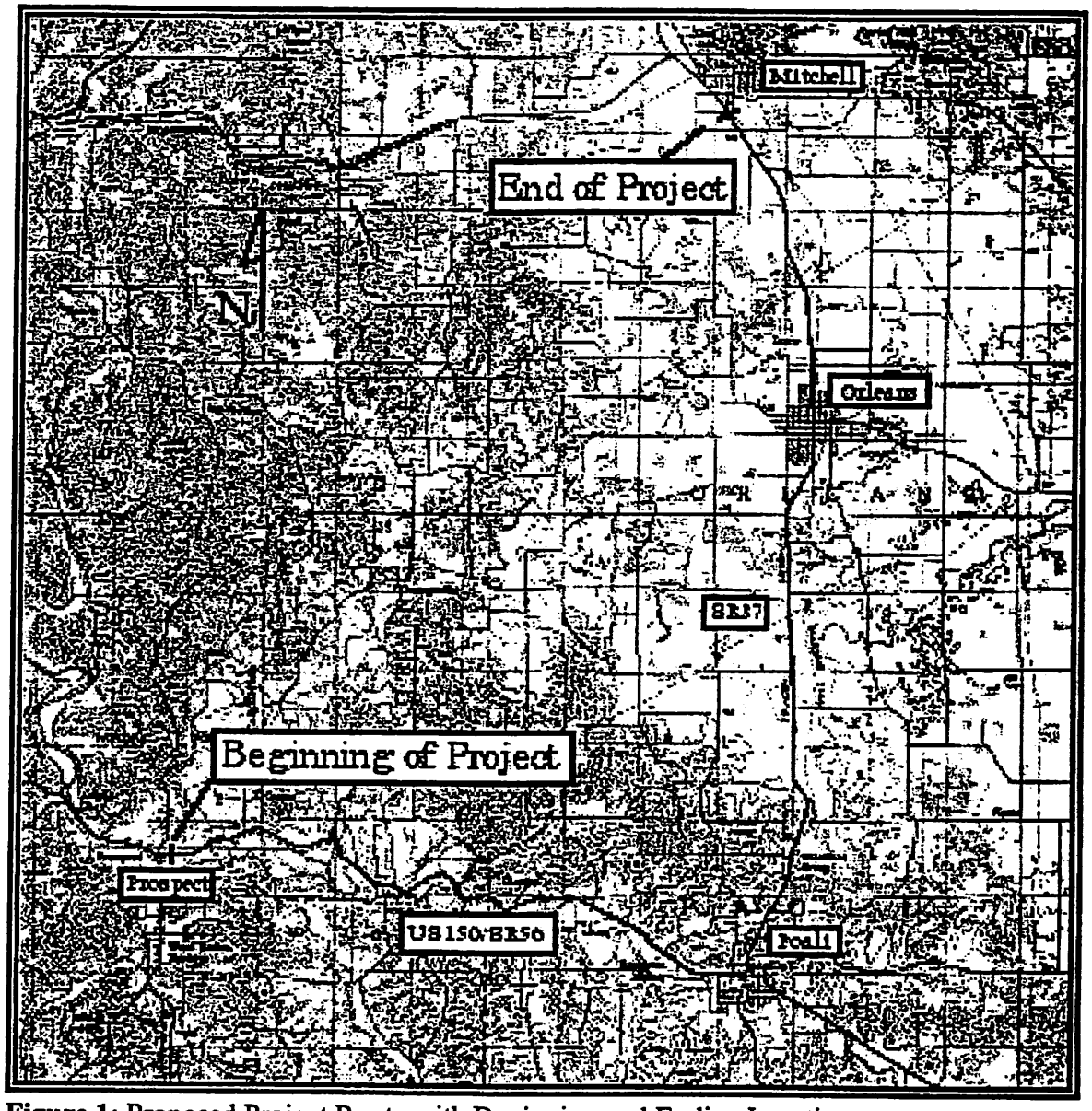

Figure 1: Proposed Project Route with Beginning and Ending Locations.

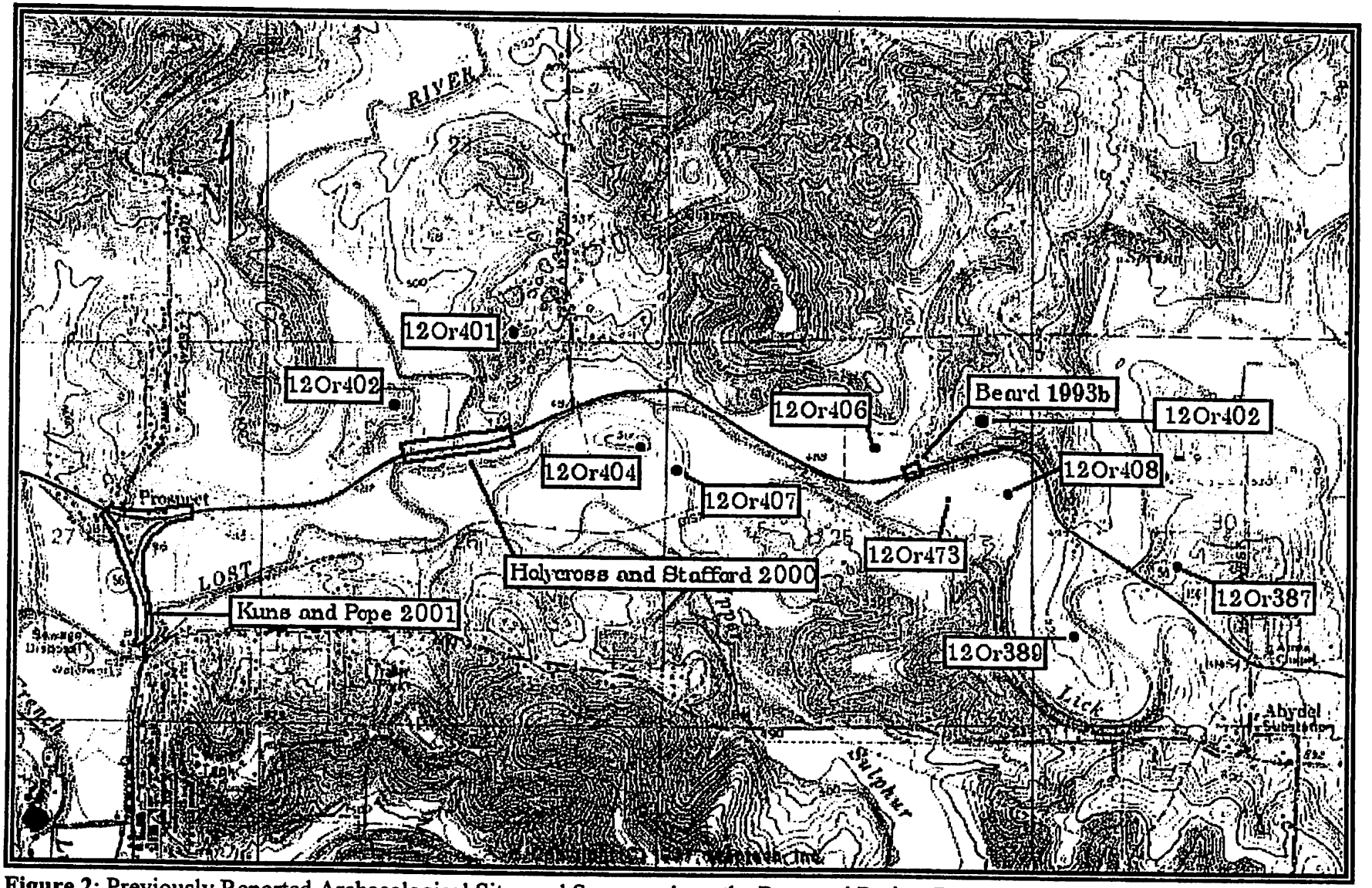

Figure 2: Previously Reported Archaeological Sites and Surveys along the Proposed Project Route. USGS 7.5' French Lick Quad.

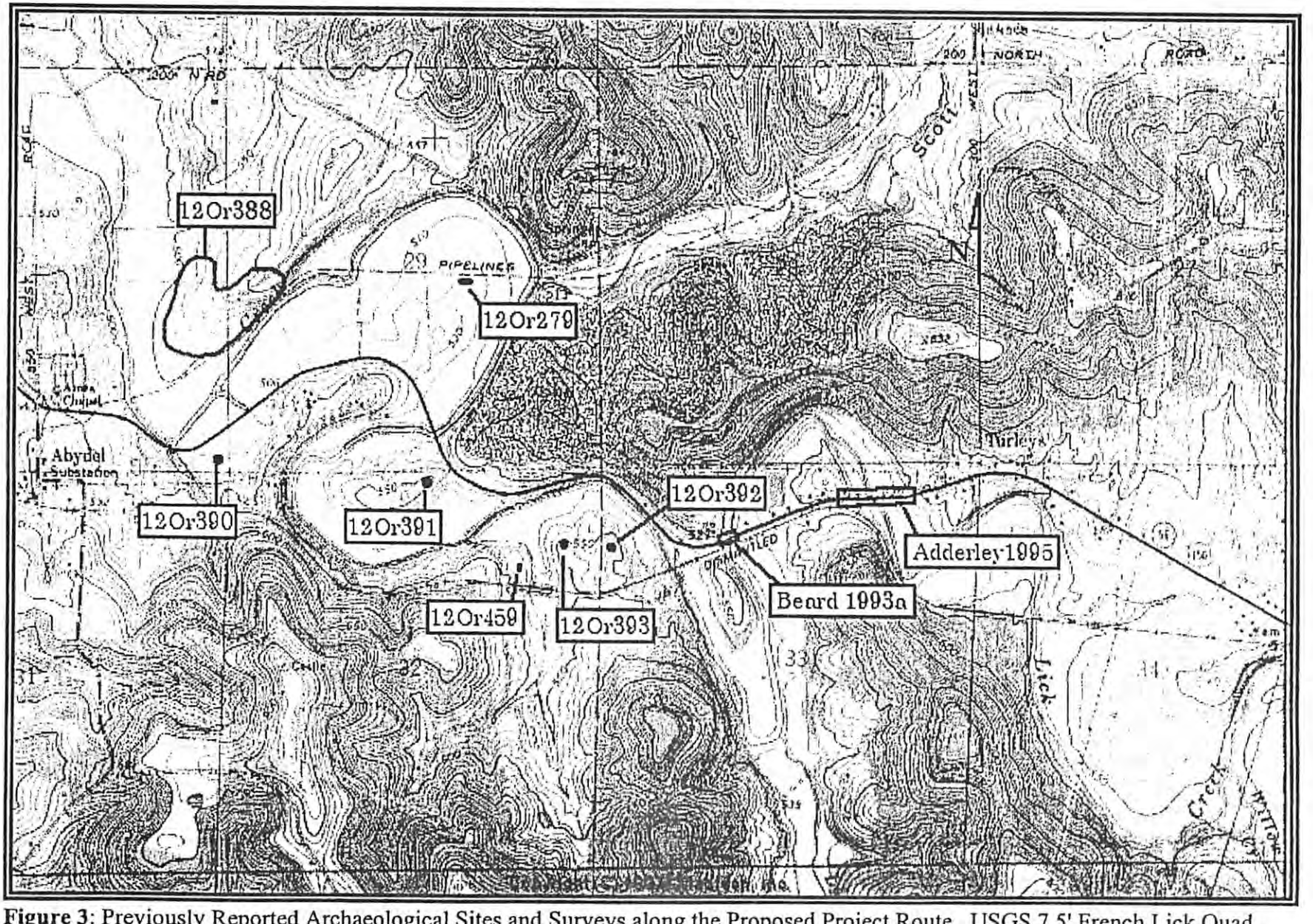

Figure 3: Previously Reported Archaeological Sites and Surveys along the Proposed Project Route. USGS 7.5' French Lick Quad.

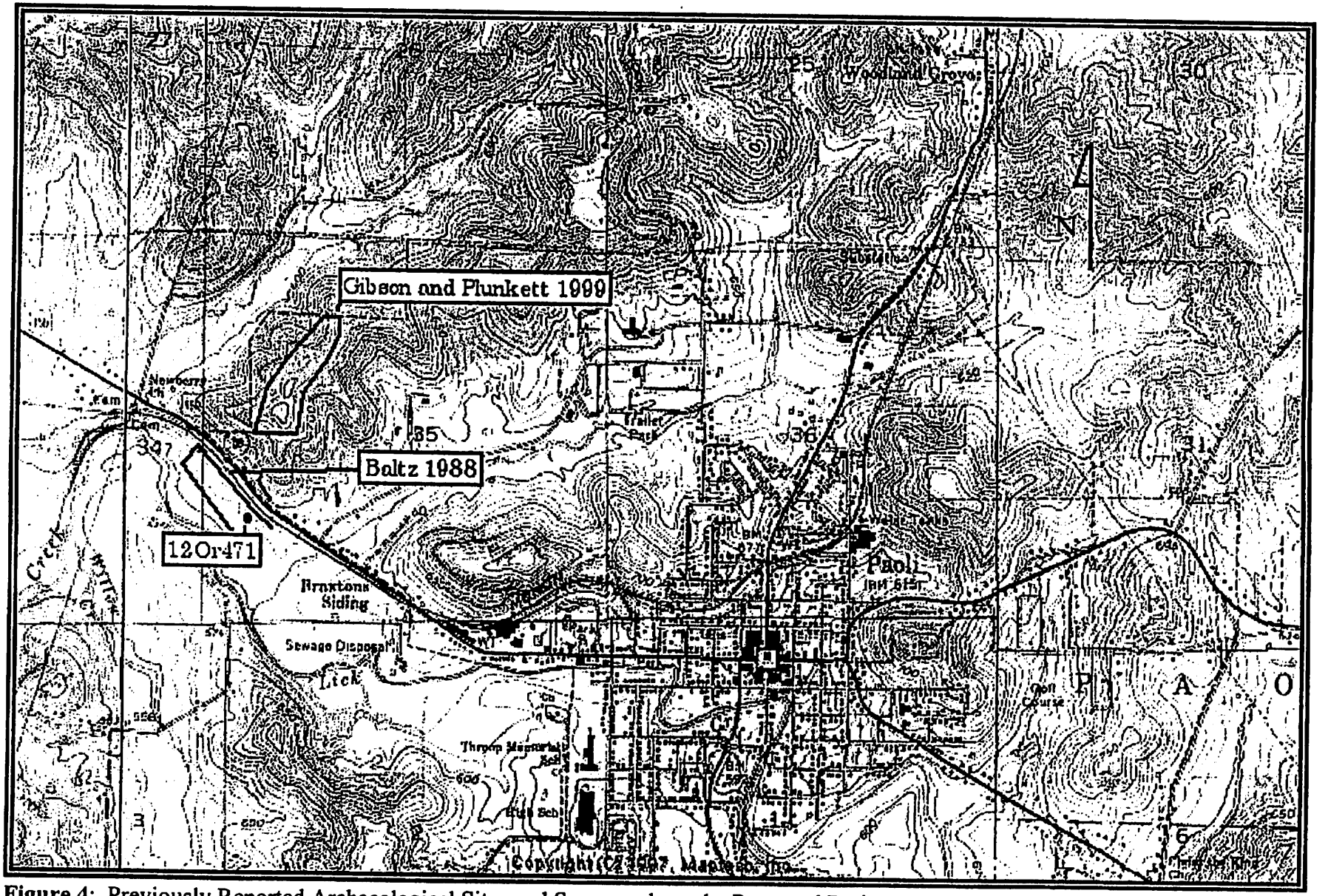

Figure 4: Previously Reported Archaeological Sites and Surveys along the Proposed Project Route. USGS 7.5' French Lick and Paoli Quads.

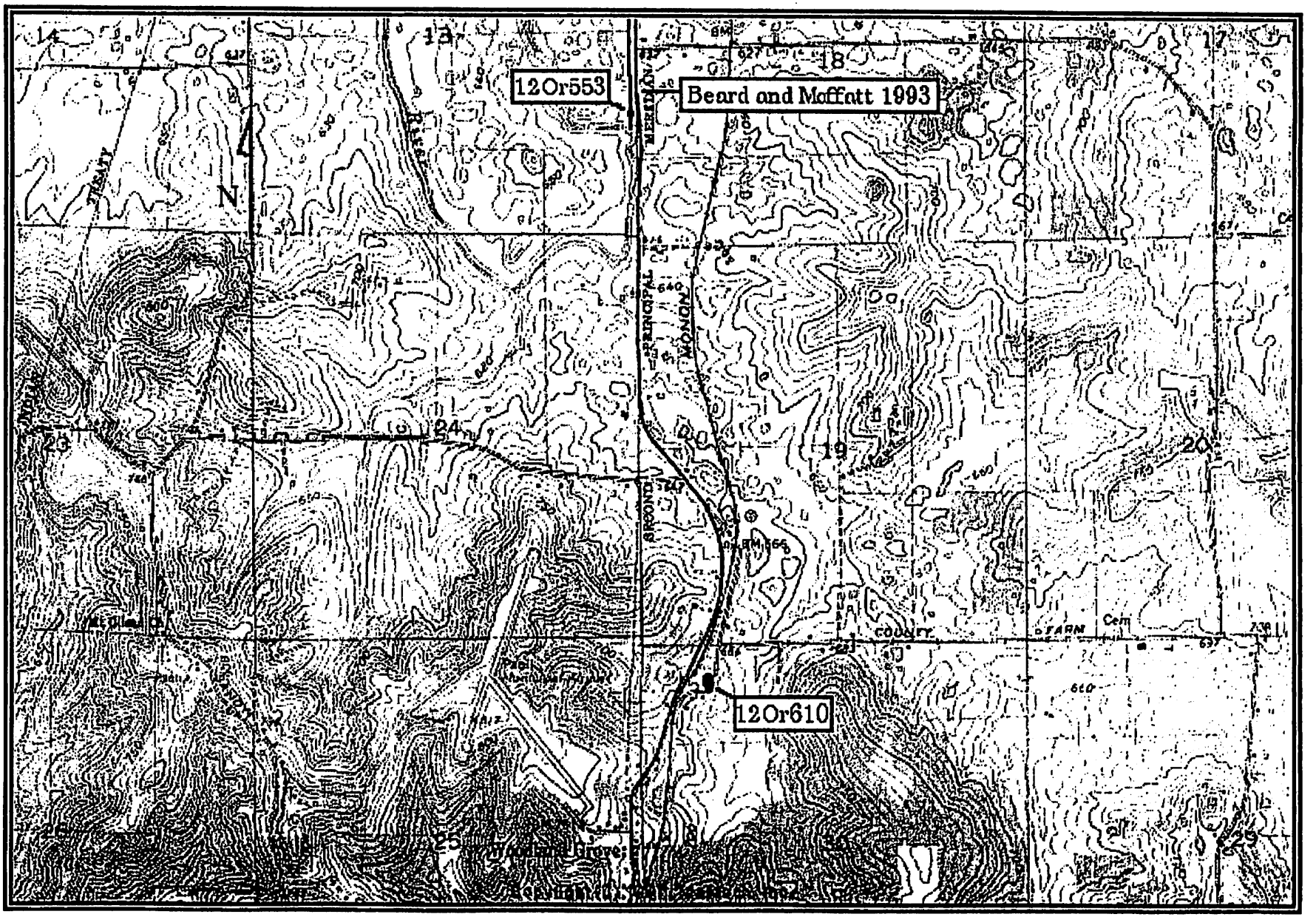

Figure 5: Previously Reported Archaeological Sites and Surveys along the Proposed Project Route. USGS 7.5' Paoli Quad.

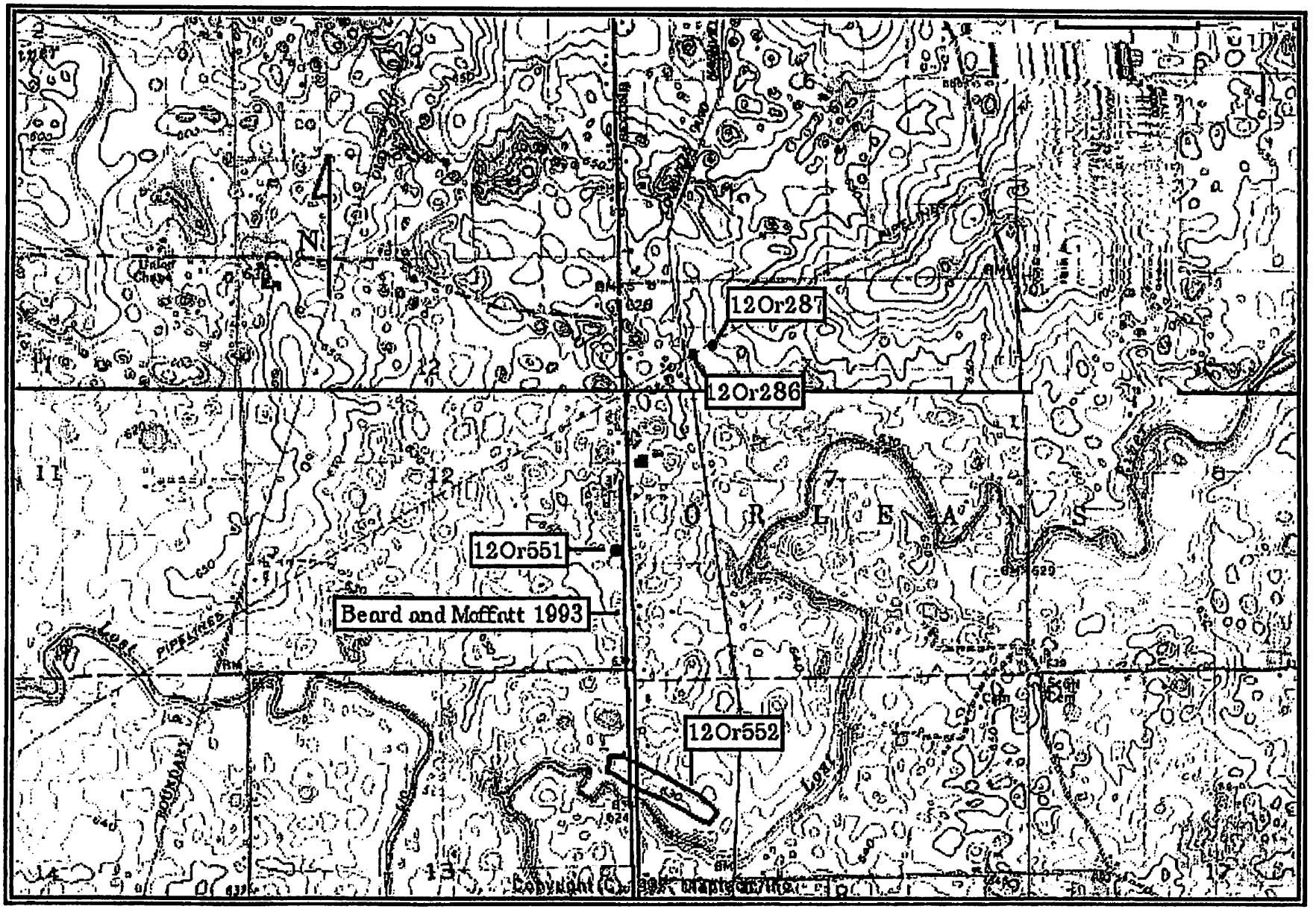

Figure 6: Previously Reported Archaeological Sites and Surveys along the Proposed Project Route. USGS 7.5' Paoli and Mitchell Quads.

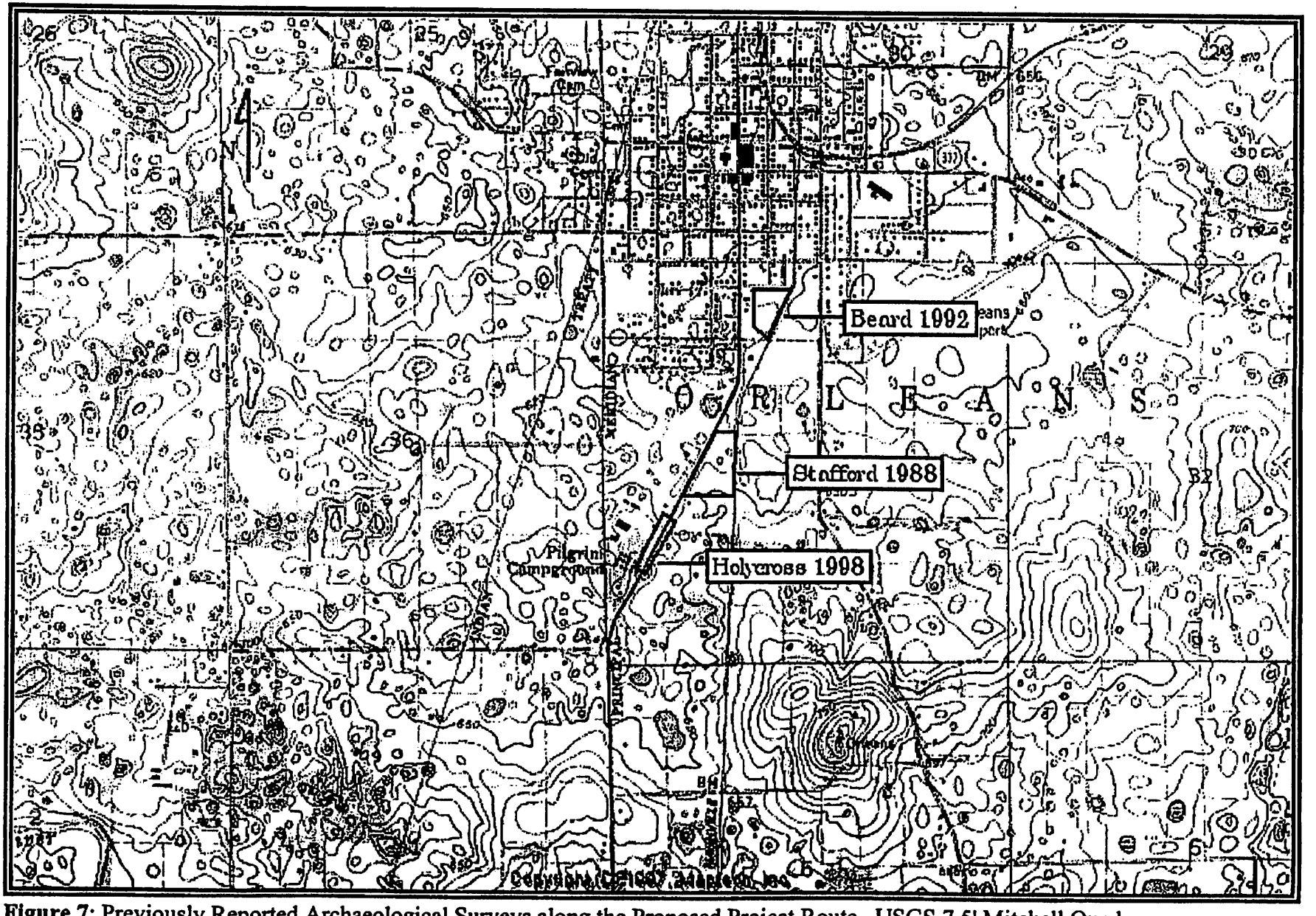

Figure 7: Previously Reported Archaeological Surveys along the Proposed Project Route. USGS 7.5' Mitchell Quad.

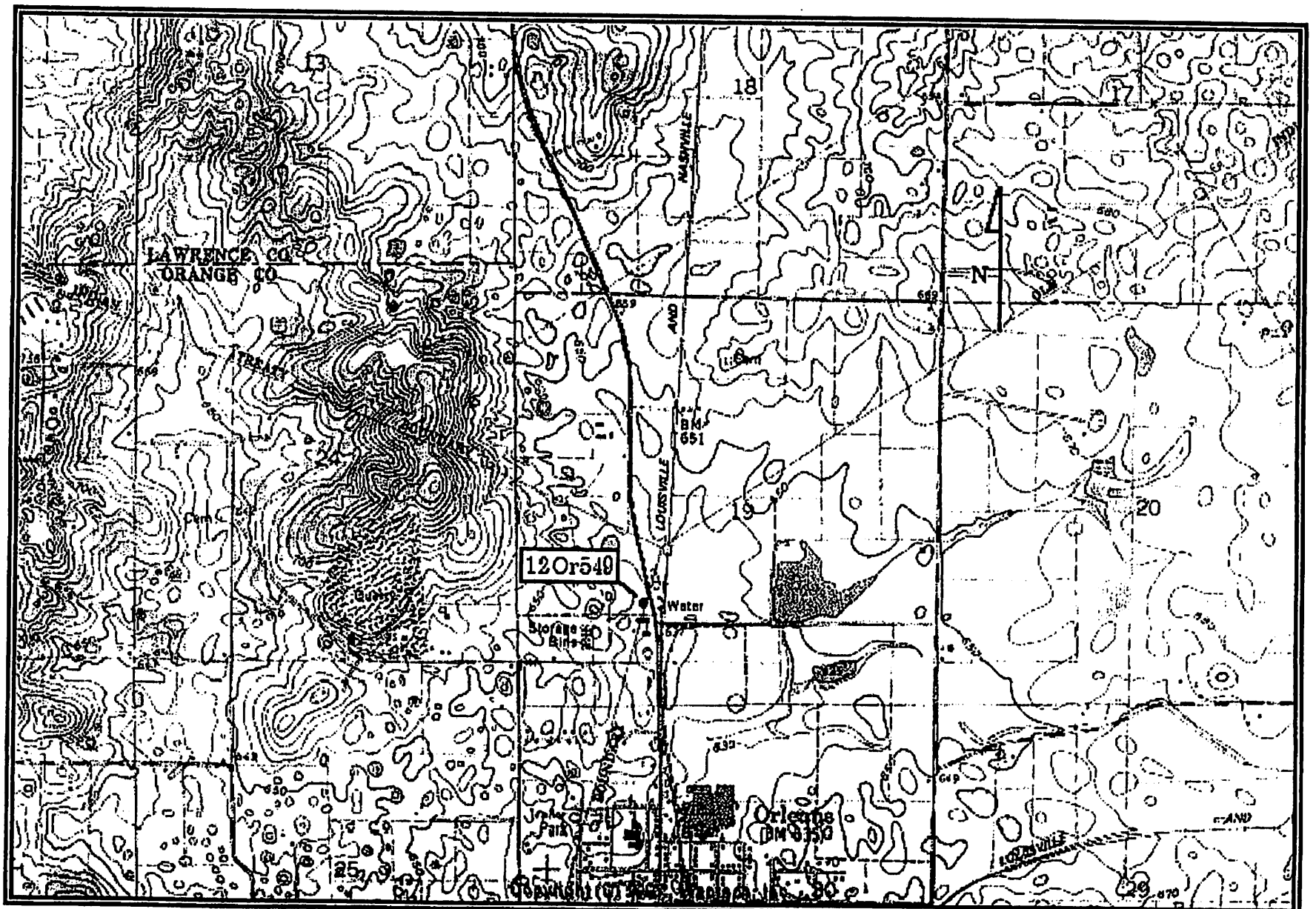

Figure 8: Previously Reported Archaeological Sites and Surveys along the Proposed Project Route. USGS 7.5' Mitchell Quad.

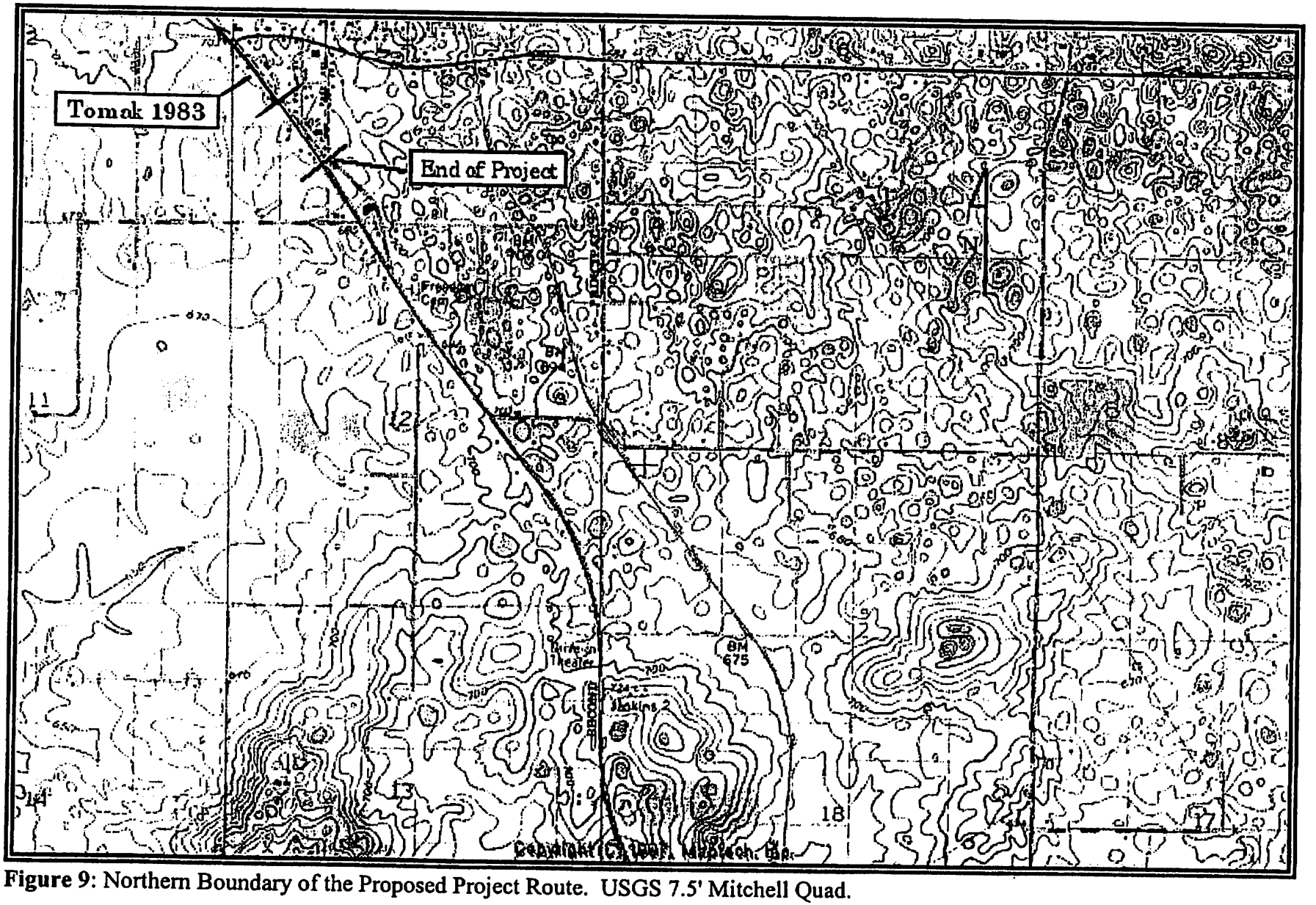

Figure 9: Northern Boundary of the Proposed Project Route. USGS 7.5' Mitchell Quad.

PROPOSAL

GEOARCHAEOLOGICAL INVESTIGATIONS OF SELECTED AREAS ALONG US150 & SR37 RELATED TO INDOT PROJECT STP-095-3 ( ), PROPOSED PAOLI BYPASS, ORANGE COUNTY, INDIANA

By

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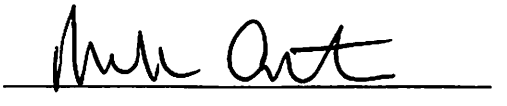

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January 16, 2002

PROPOSAL

GEOARCHAEOLOGICAL INVESTIGATIONS OF SELECTED AREAS ALONG US150 & SR37 RELATED TO INDOT PROJECT STP-095-3 ( ), PROPOSED PAOLI BYPASS, ORANGE COUNTY, INDIANA

Project & Location

Butler, Fairman, & Seufert, on behalf of the Indiana Department of Transportation, are involved with the engineering of a proposed bypass around Paoli, in Orange County, Indiana. In large part, roads to be affected are US150 and SR37. Phase Ia archaeological investigations of various project segments have been completed by Indiana State University (Cantin 2002), Landmark Archaeological and Environmental Services, Inc. (Carmany 2002), and Archaeological Consultants of the Midwest, Inc. (Jackson 2002). The latter two archaeological consultants encountered alluvial soils in which Phase Ic subsurface reconnaissance was recommended.

Landmark (Carmany 2002) identified two locales along SR37 for Phase Ic testing. The first is at a point where SR37 crosses the Lost River, in Section 13, T2N R1W, and Section 18, T2N R1E, both in Orleans Twp., Orange Co., IN, as shown on the USGS 7.5' Paoli topographic quadrangle. The area recommended for testing was 0.1ha (ca. 0.25ac). The second locale is in an approximate 350m-long segment on the west side of SR37 where Lost River parallels SR37, in Sections 13 & 24, T2N R1W, Orleans Twp., Paoli quad. Area recommended for testing was 0.51ha (1.3 ac). As such, a total of 6148.22 sq. m. were identified for testing, with a 3% sample recommended for backhoe trenching.

Phase Ic testing was recommended by Archaeological Consultants (Jackson 2002) for an approximate 3.0km long segment along US150, between CR590W and the US150-SR56 interchange near Prospect. Involved are portions of Secs. 25 & 26, T2N R2W, French Lick Twp., as shown on the USGS 7.5' French Lick topographic quadrangle. This corresponds with surveyed segments designated by Jackson (2002) as PS3, 5, 6, 7, & 8, and SP1, 2, 3, 4, 5, 6, & 7. This segment passes through the Lick Creek floodplain. It should be noted that a 530m long segment of the larger 3.0km project length has previously been subjected to a type of subsurface investigation by this facility for INDOT (Holycross & Stafford 2000) in the recent past. The methodology, results, and ramifications will be discussed below.

Previous Subsurface Testing/Geomorphic Evaluation

At the request of INDOT, this facility conducted a type of subsurface testing to evaluate the potential for the incorporation of buried cultural deposits at the US150-Lost River crossing (Holycross & Stafford 2000). Rather than undertaking a conventional trenching project, this facility conducted a geomorphic evaluation via a Giddings hydraulic probe. The Giddings is a trailer-mounted rotary augering device capable of extracting 6cm-diameter solid-earth cores to depths of ten meters or more (though this is rarely necessary). The Giddings coring can be viewed as a precursor to a formal

Phase Ic procedure. It is far less labor-intensive and time consuming than trenching, is a less destructive technique, and is just as efficient as trenching in terms of accessing the sediments to be evaluated for buried site potential. It is designed to determine the very necessity of costly trenching, and is effective in defining the specific area and landforms which are in need of further evaluation. It is a very efficient subsurface investigative strategy when the nature of sediments (age, landform, stratigraphy, etc) is unclear.

In the ISUAL investigation of the US150/Lost River crossing, two Giddings cores were extracted as well as two hand-operated bucket auger samples (Holycross & Stafford 2000). To summarize, identified throughout the area were entisols developed in a thick mantle of historic alluvium. However, a well-developed paleosol with the potential for buried archaeological deposits was identified in the northwest project quadrant. Backhoe trenching was then recommended for this project quad (Holycross & Stafford 2000: 8), with an additional trench to be placed in the southwest project quad. No further investigations were recommended for the eastern half of the project area. This study demonstrates the utility of Giddings coring prior to initiating a larger-scale trenching project.

Scope of Service

There are several procedures that can be implemented to assess the geomorphic potential for incorporation of subsurface deposits. Given the efficiency for Giddings coring to distinguish areas and landforms that can be exempted from subsequent trenching or are in need of further assessment, the ISUAL proposes a geomorphic evaluation via the Giddings hydraulic probe for the project area, in lieu of the conventional means of excavating a series of backhoe trenches. This would consist of placing a total of 12-15 Giddings cores within the three individual areas targeted for evaluation. All landform types within those tracts would be thus sampled, which will facilitate the evaluation of the landform-sediment assemblages' (LSA) *potential* for buried archaeological sites. The *direct* identification of buried archaeological sites is secondary in this stage. Subsequent data analysis will determine if backhoe trenches are required, and where and what landforms they are to be placed *if necessary*. If trenching is determined to be necessary, it would be under the aegis of Subsurface Testing, and would require a separate proposal and budget. Subsurface Testing would be specifically designed to sample the high probability areas and to define the limits of buried deposits.

Given local microtopography that does not show on the 10' contours of standard USGS 7.5' maps, assessing exactly how many cores will be necessary and how they are to be distributed is not pragmatic, and some latitude should be given in the field in addressing these questions to ensure adequate coverage. However, as an outline, we expect that two cores should be sufficient in the SR37/Lost River crossing, with three more to be placed on the west side of SR37 in the 350m-long segment in which Lost River parallels the highway. As many as ten cores may be needed in the US150 segment. Obviously, the 530m-long US150/Lost River segment formerly examined by ISUAL will not need additional coring. This segment, though physically located within project area, is exempted from this project entirely.

In the field, the retrieved cores will be wrapped in plastic film and aluminum foil and taped to boards to preserve their integrity, and marked according to core number and depth. The cores will be returned to the ISUAL for examination. Soil texture, color, structure, thickness, horizonation, and other attributes will be evaluated in an effort to interpret depositional environments and their potential for incorporating buried archaeological deposits. From these data, a determination of subsurface potential can be made, and subsequent trenching, if necessary, can be specified as to the number and distribution of trenches.

If human remains are encountered, they will be treated in accordance with IC 14-21-1 and 312 IAC 21, and promptly reported to DHPA.

Core location data will be obtained from a hand-held Trimble GeoExplorer 3 GPS unit, and will be plotted on standard maps. Archaeological materials identified will be returned to this facility for cleaning, analysis, and permanent curation. Archaeological sites encountered will be plotted on standard USGS 7.5' topographic quadrangle maps, and assigned a DHPA-issued site number. State archaeological site inventory forms will be completed, and a final report with maps, profiles, and recommendations will be prepared in a timely manner.

Landowner permission should be the responsibility of Butler, Fairman, and Seufert or INDOT. Subsurface investigations will not be conducted on residential or commercial properties unless absolutely necessary.

A budget will be prepared under separate cover.

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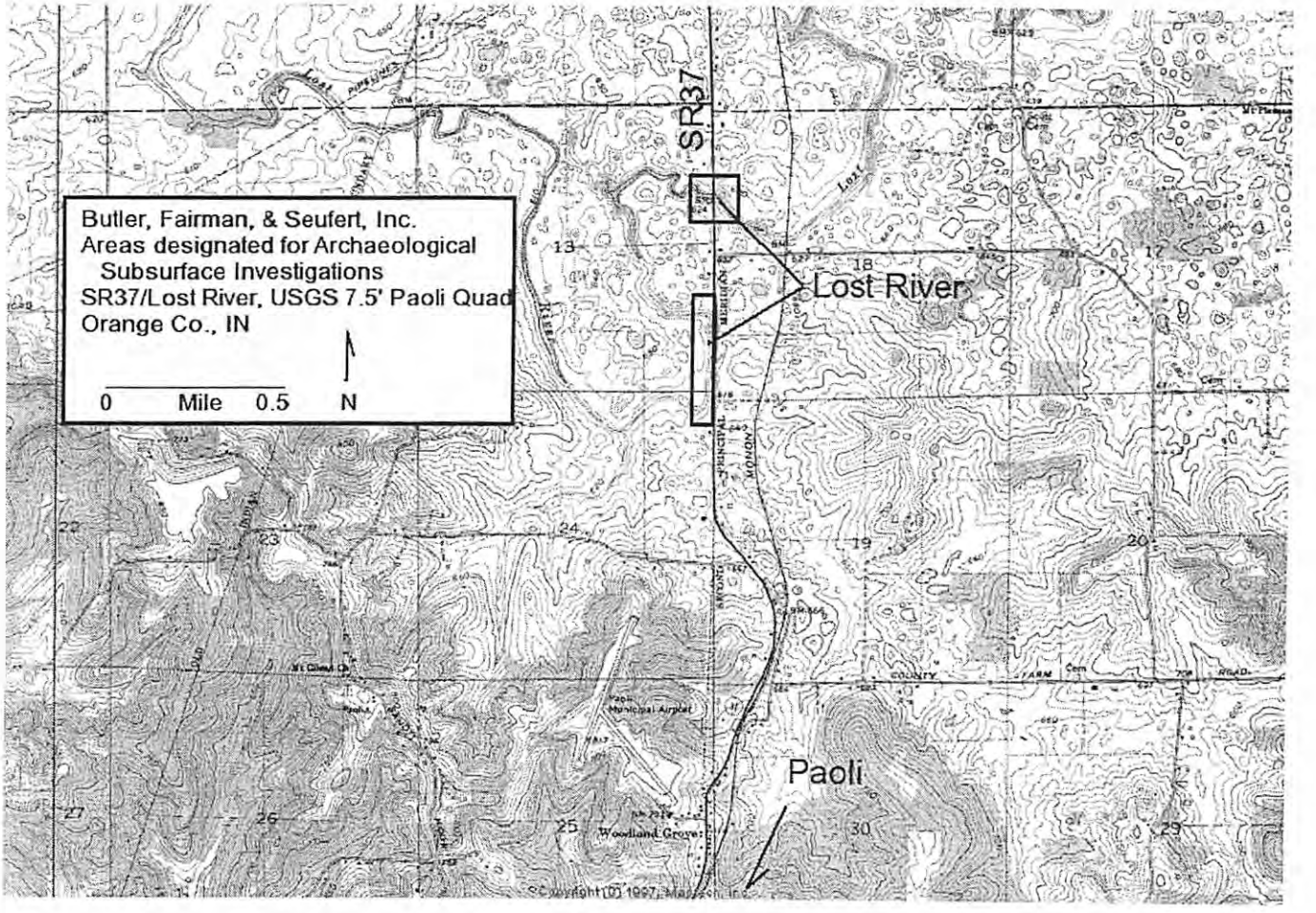
Butler, Fairman, & Seufert, Inc.
Areas designated for Archaeological
Subsurface Investigations
SR37/Lost River, USGS 7.5' Paoli Quad
Orange Co., IN
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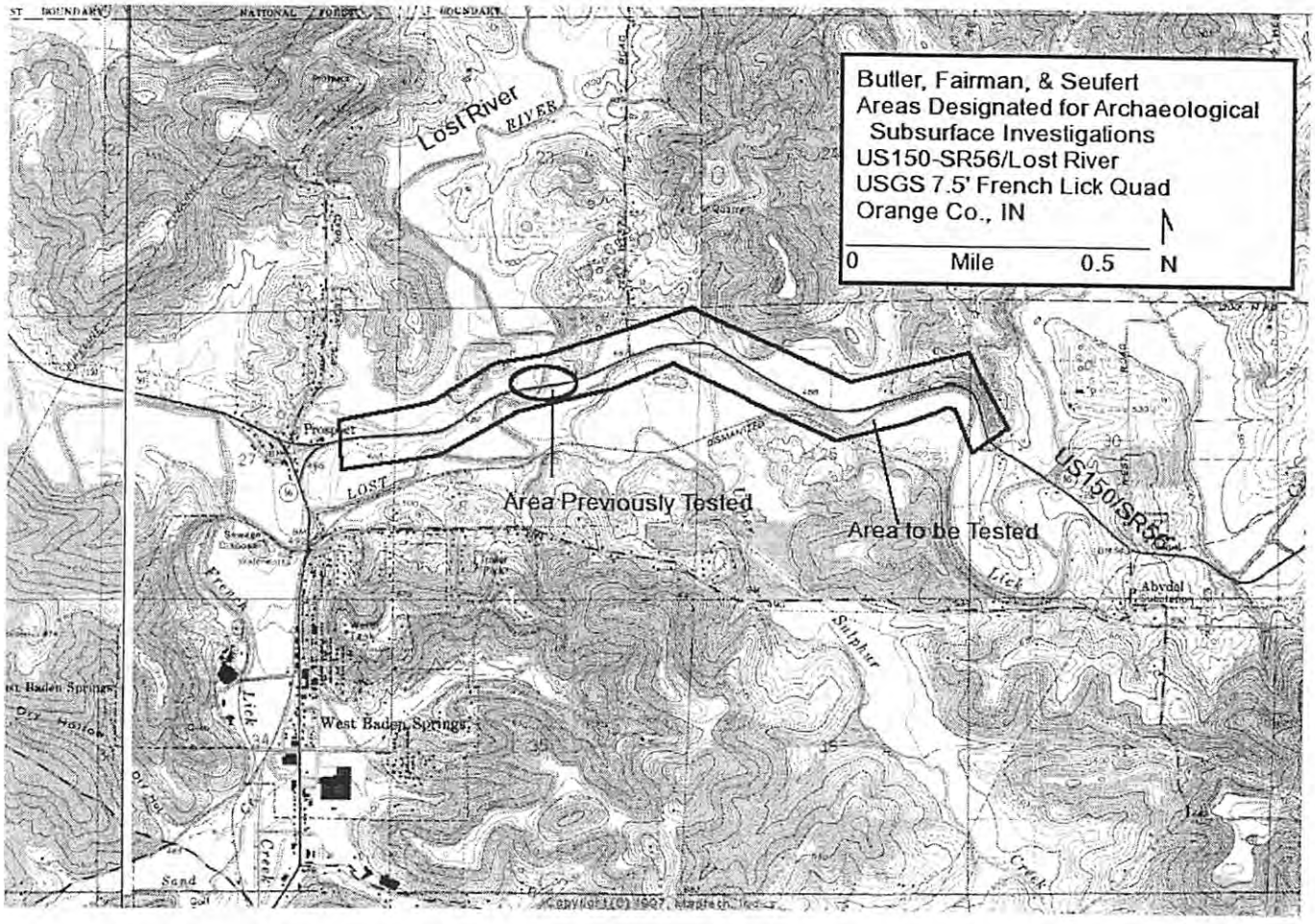
SR37
Lost River
Paoli


Butler, Fairman, & Seufert
Areas Designated for Archaeological
Subsurface Investigations
US150-SR56/Lost River
USGS 7.5' French Lick Quad
Orange Co., IN
0 Mile 0.5 N
Lost River
Area Previously Tested
Area to be Tested
US150/SR56
West Baden Springs
Prospect
Lick
Sulphur
Creek

Archaeological Sites 12-Or-740 and 741

Orange County, Indiana

Archaeological Testing Proposal

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Archaeological Testing Proposal
Archaeological Sites 12-Or-740 and 741
Orange County, Indiana

Introduction

In November of 2002, Archaeological Consultants of the Midwest conducted a reconnaissance level survey for the proposed rehabilitation of US Highway 150 / SR 56 between the towns of Prospect and Paoli in Orange County, Indiana (Figure 1). The project area was located in portions of Sections 1 and 2, Township 1 North, Range 1 West, Sections 35, 34, 33, 32, 30 and 29, Township 1 North, Range 2 West and Sections 25, 26 and 27, Township 2 North, Range 2 West as shown on the USGS 7.5' French Lick and Paoli, Indiana, Quadrangle (Figures 2 3 and 4). The project area measured approximately 14.5 km by 60 m and contained approximately 215 acres.

The archaeological field reconnaissance located 13 previously unrecorded archaeological sites (Jackson and Church 2002). One of the sites (12-Or-740) appeared to be potentially significant and avoidance or archaeological testing was recommended (Jackson and Church 2002). Additionally, site 12-Or-741 was determined to be potentially significant during a review of the field reconnaissance report by the IDNR, SHPO (Mohow 2001). The archaeological field reconnaissance also documented the presence of well drained, alluvial soil within the project area. Based on the presence of the alluvial soil, a subsurface reconnaissance was recommended for portions of the project area (Jackson and Church 2002).

This proposal addresses the archaeological testing of sites 12-Or-740 and 741. The goals of the archaeological testing are to determine the nature, extent and significance of archaeological sites 12-Or-740 and 741.

Testing Proposal

The proposed testing methodology is based on the results of the archaeological field reconnaissance conducted by Archaeological Consultants of the Midwest. The testing methodology is structured to intensify the sample of data recovered from sites 12-Or-740 and 741 thus allowing a determination of significance for each archaeological site.

Site 12-Or-740 measures approximately 90 meters by 40 meters and is located in a portion of the SW 1/4 of the NE 1/4 of the NW 1/4 of the NE 1/4 of Section 32, Township 2 North, Range 1 West as shown on the USGS 7.5' French Lick, Indiana, Quadrangle (Figure 5). The site contained 60 prehistoric artifacts. The soil at the site was Crider silt loam, 6-12% slopes, eroded (Wingard 1984: 17, Map Sheet 27).

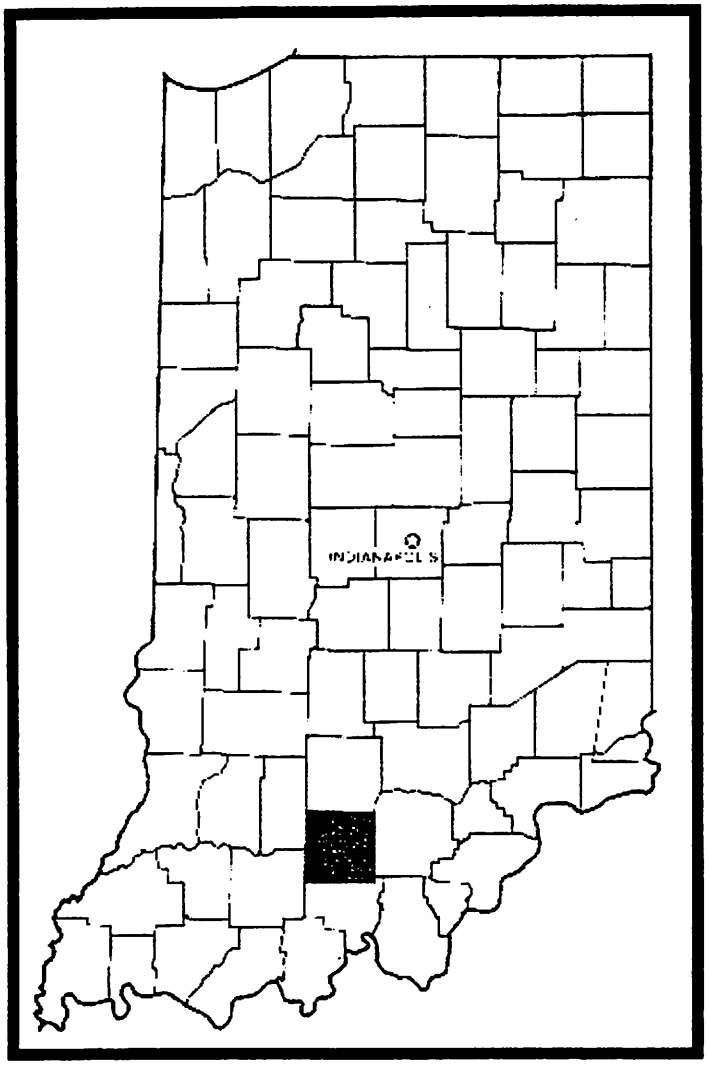

Figure 1. Location of Orange County within the State.

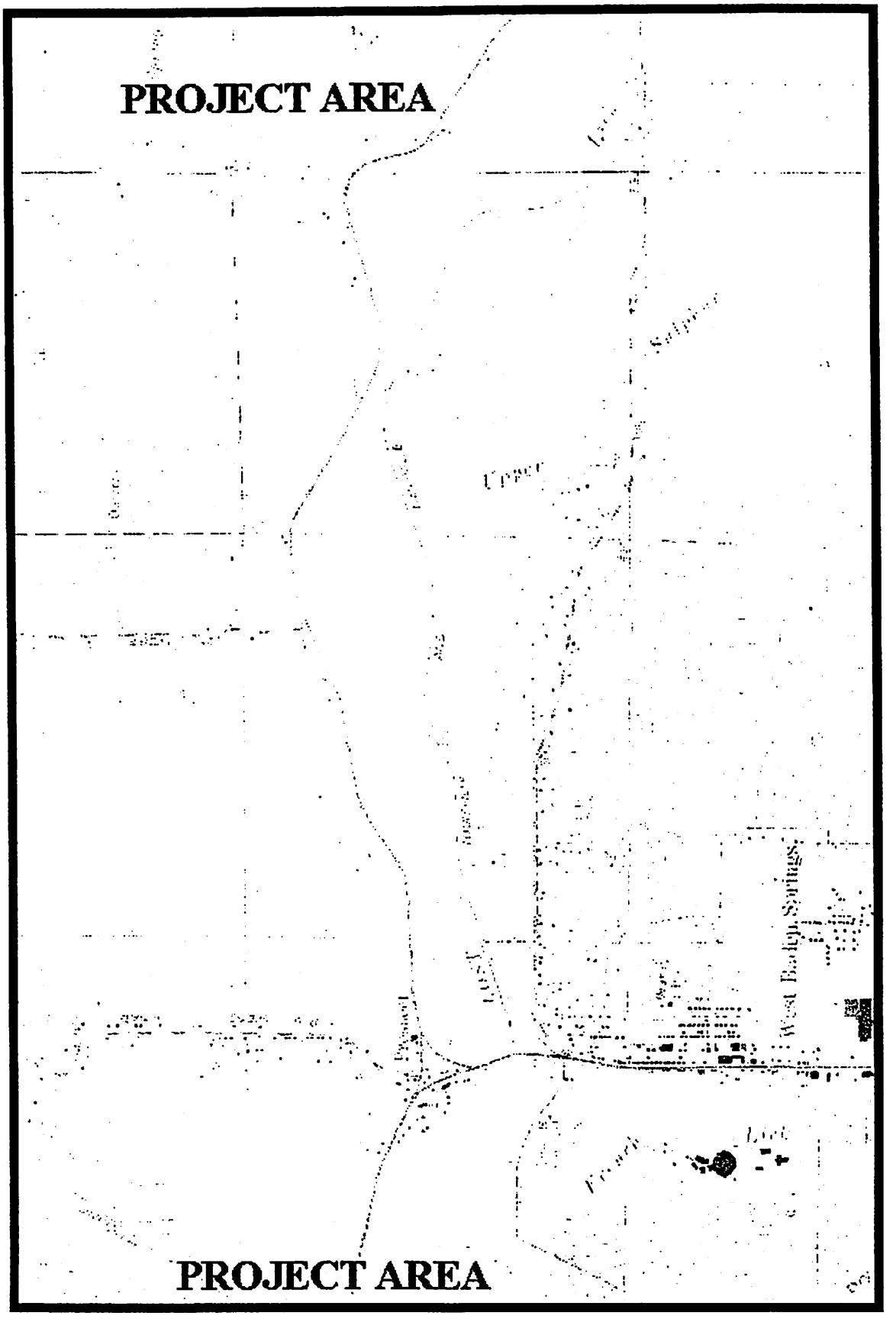

Figure 2. A portion of the USGS 7.5' French Lick, Indiana, Quadrangle showing the western portion of the project area.

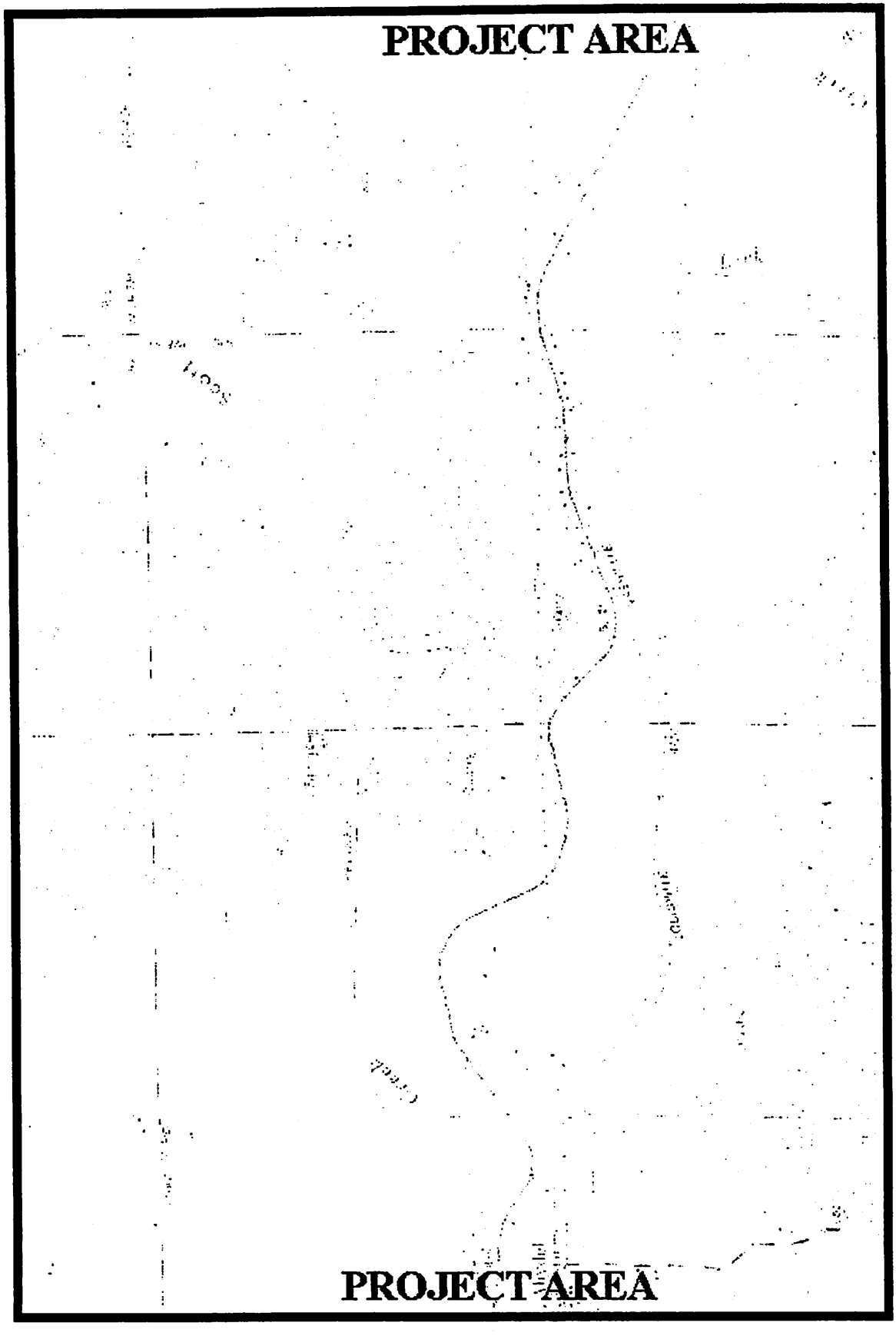

Figure 3. A portion of the USGS 7.5' French Lick, Indiana, Quadrangle showing the middle portion of the project area.

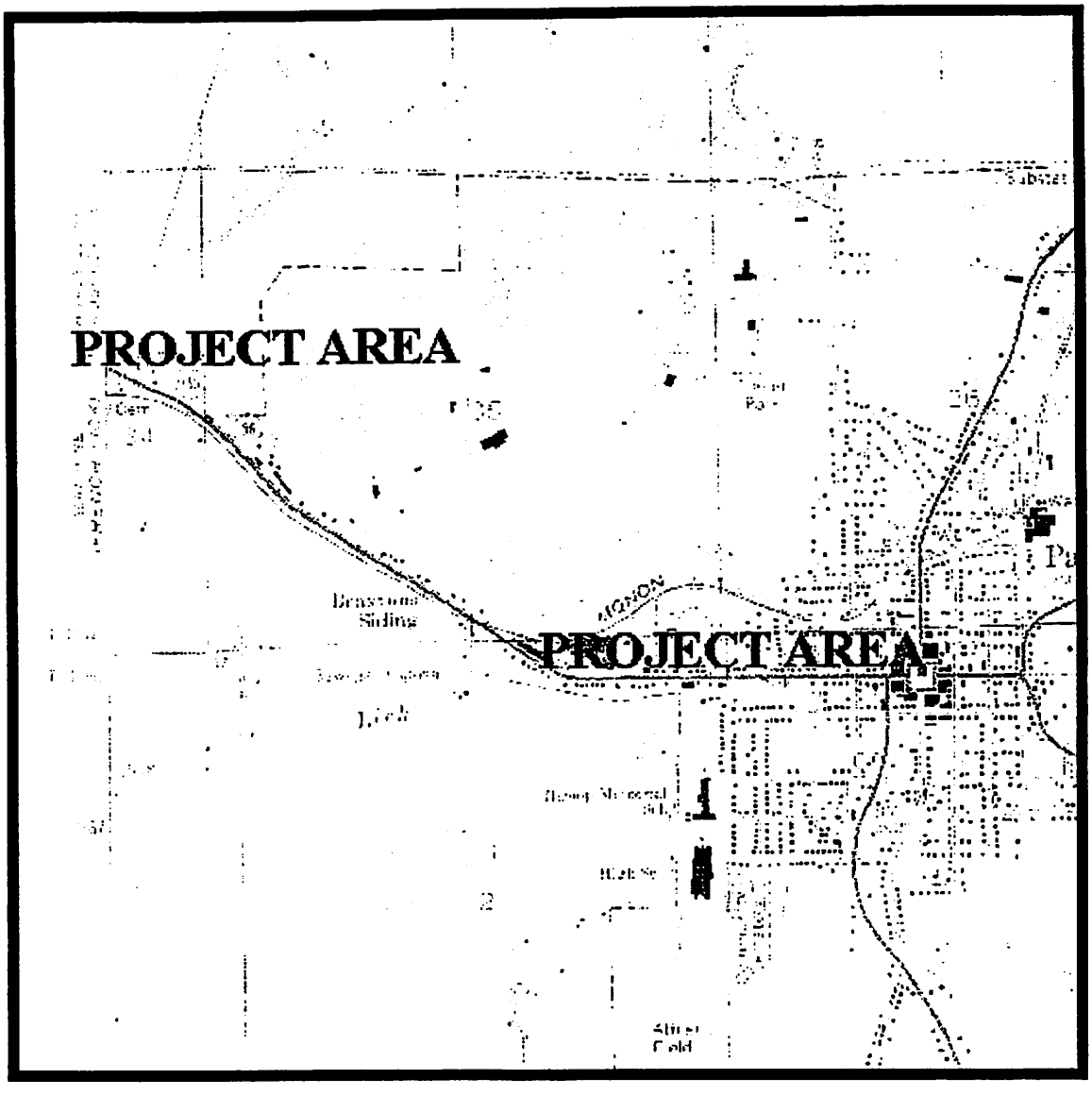

Figure 4. A portion of the USGS 7.5' Paoli, Indiana, Quadrangle showing the eastern portion of the project area.

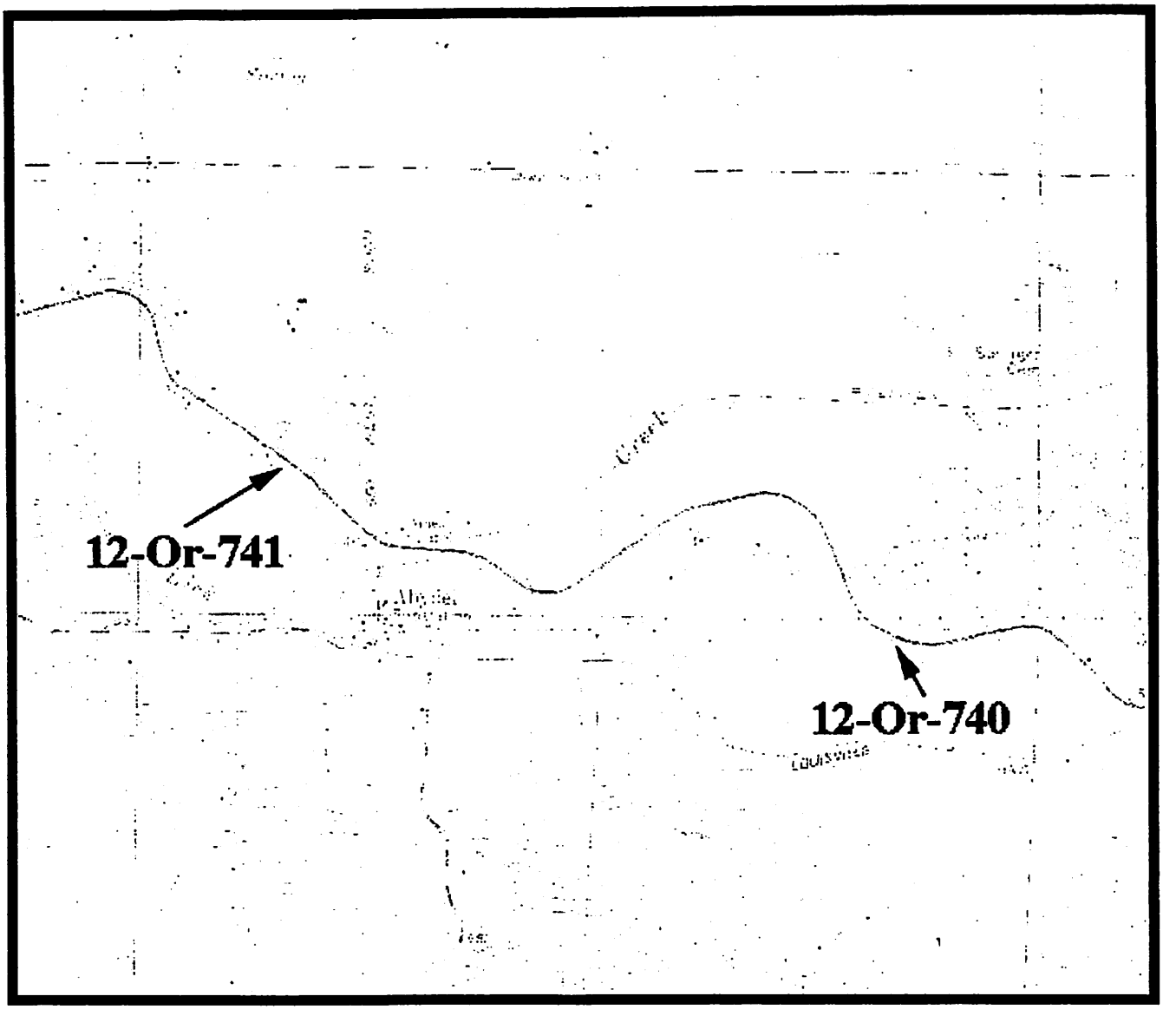

Figure 5. A portion of the USGS 7.5' French Lick, Indiana, Quadrangle showing the locations of archaeological sites 12-Or-740 and 741.

Site 12-Or-741 measures approximately 40 meters by 10 meters and is located in a portion of the SE 1/4 of the SW 1/4 of the NE 1/4 of the SW 1/4 of Section 30, Township 2 North, Range 1 West as shown on the USGS 7.5' French Lick, Indiana, Quadrangle (Figure 5). The site contained 7 prehistoric artifacts. The soil at the site was Crider silt loam, 2-6% slopes (Wingard 1984: 17, Map Sheet 21).

Because the sites are located in agricultural fields it is recommended that testing proceed in the following manner.

A backhoe with a smooth bucket will be used to excavate a 10% sample of each site area. A 10% sample of site 12-Or-740 will require the excavation of 360 square meters. This sample size will be achieved through the excavation of 12 trenches measuring 30.5 meters by 1 meter to the bottom of the plowzone. A 10% sample of site 12-Or-741 will require the excavation of 40 square meters. This sample size will be achieved through the excavation of 1.3 trenches measuring 30.5 meters by 1 meter to the bottom of the plowzone.

The bottom of each trench will be shovel scraped and subsurface deposits defined. If features are encountered, they will be defined and mapped in plan view. Each feature will be excavated in 10cm levels. All feature fill will be screened through 1/4' wire mesh and a 5 liter sample will be saved for flotation. If midden is encountered, 1 meter by 1 meter units will be excavated by hand in 10cm levels to provide a 25% sample of the exposed midden.

Samples appropriate for radiocarbon dating will be collected as available. Diagnostic prehistoric artifacts and unique historic artifacts will be photographed and mapped in situ and individually bagged. Non-diagnostic artifacts will be provenienced by trench location or feature. Fire-cracked rock outside of feature context will be counted and weighed but may be discarded in the field. All artifacts will be taken to the Archaeological Resources Management Service laboratory for processing, analysis and curation. The excavation will be documented photographically.

Although no evidence of human remains was found during the field reconnaissance and none are expected, should any human remains be encountered during excavation of the site, excavation of that particular area would stop and the Division of Historic Preservation and Archaeology of the Indiana Department of Natural Resources contacted immediately to insure compliance with State laws concerning the excavation of human burials.

Laboratory Methods

Laboratory methods will follow standardized procedures used on Archaeological Resources Management Service projects. Artifacts will be cleaned, identified and catalogued. Metrical attributes and raw material identification will be recorded. Diagnostic artifacts will be drawn and/or photographed for inclusion in the final report. Flotation samples will be hand sorted and identified. Radiocarbon samples will be dried, weighed and repackaged prior to submission to a dating laboratory. Feature forms and level records will be verified and maps redrawn for publication. Detailed descriptions of the methods and results of all laboratory procedures will be

included in the final report.

Conclusions

Upon completion of the project, all trenches will be backfilled. Artifacts recovered will be processed, analyzed and curated at Ball State University in compliance with Indiana Code. A report will be written containing the details of the project and the results of the testing. The report will address the nature and extent of both sites and will evaluate the integrity and significance of each site. The report will also make recommendations concerning the necessity for additional, if any, archaeological investigation.

Jackson, Christopher and Flora Church

2002 A Phase Ia Archaeological Reconnaissance Survey for the Proposed Rehabilitation of United States Highway 150 / Indiana State Road 56, French Lick and Paoli Townships, Orange County, Indiana. Ms on file, Archaeological Resources Management Service, Ball State University, Muncie and Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology, Indianapolis, Indiana.

Wingard, Robert C.

1984 Soil Survey of Orange County, Indiana. United States Department of Agriculture, Soil Conservation Service, Washington, D.C.

GEOARCHAEOLOGICAL INVESTIGATIONS OF SELECTED AREAS ALONG US150 RELATED TO INDOT PROJECT STP-024-4, ORANGE COUNTY, INDIANA

By

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GEOARCHAEOLOGICAL INVESTIGATIONS OF SELECTED AREAS ALONG US150 RELATED TO INDOT PROJECT STP-024-4, ORANGE COUNTY, INDIANA

Project & Location

Butler, Fairman, & Seufert, on behalf of the Indiana Department of Transportation, are involved with the engineering of a proposed highway improvements around Paoli, in Orange County, Indiana. In large part, roads to be affected are US150 and SR37. As this project is somewhat complex, for management purposes, this report is confined to procedures conducted along US150, with a separate report to be prepared for the SR37 segment. The segment of US150 examined in this project begins at the SR56 interchange at Prospect, and continues some 4.2km to the east. This line passes through Secs. 25, 26, and 27, T2N R2W, and Sec. 30, T2N R1W, in French Lick Twp., Orange County, Indiana, as shown on the USGS 7.5' French Lick topographic map (Figure 1).

The ISUAL was contracted to perform a georachaeological evaluation of the project segments. The US150 segment traverses a portion of the Lick Creek valley. From data recovered in eight solid-earth cores extracted by a Giddings hydraulic soil probe, an assessment of the potential for buried cultural deposits is made based on the sediments/soils represented, the associated landforms, and the geomorphic processes responsible for this landscape.

Previous Investigations

Phase Ia archaeological investigations of various project segments have been completed by Indiana State University (Cantin 2002), Landmark Archaeological and Environmental Services, Inc. (Carmany 2002), and Archaeological Consultants of the Midwest, Inc. (Jackson 2002). The latter two archaeological consultants encountered alluvial soils in which Phase Ic subsurface reconnaissance was recommended. This report addresses the issues of alluvial deposits along US 150.

Phase Ic testing was recommended by Archaeological Consultants (Jackson 2002) for an approximate 3.0km long segment along US150, between CR590W and the US150-SR56 interchange near Prospect. Involved are portions of Secs. 25, 26 and 30, T2N R2W, French Lick Twp., as shown on the USGS 7.5' French Lick Quadrangle (Figure 1). This corresponds with surveyed segments designated by Jackson (2002) as PS3, 5, 6, 7, & 8, and SP1, 2, 3, 4, 5, 6, & 7. This segment passes through both the Lost River and Lick Creek floodplains. The existing right-of-way in area is generally 9.1 m (30ft) on both sides of the centerline. The proposed project will expanded the right-of-way to between 20 m (66 ft) and 40 m (131 ft) from the centerline. It should be noted that a 530m long segment of the larger 3.0km project length has previously been subjected to a subsurface investigation by this facility for INDOT (Holycross & Stafford 2000) in the recent past.

ISUAL was requested to conduct an assessment of buried site potential and a proposal was submitted (Cantin 2003) outlining the procedure for addressing the relative age of soils, environments of sediment deposition, and necessity of further investigations within previously untested portions of the proposed project area. Approximately seven to ten cores were to be

extracted from alluvial settings within the project area.

Previous Subsurface Testing/Geomorphic Evaluation

A Phase Ia survey was completed for the replacement of the current structure carrying US 150 over the Lost River by Archaeological Services Consultants (ASC) on 10/28/97 (Jackson 1997). No archaeological sites were found, but alluvial settings with the potential for buried cultural deposits were identified. INDOT requested this facility to conduct an assessment of buried site potential via a Giddings hydraulic soil probe in advance of trenching (Figure 1).

Rather than undertaking a conventional trenching project, this facility conducted a geomorphic evaluation via a Giddings hydraulic probe (Holycross & Stafford 2000). The Giddings is a trailer-mounted rotary augering device capable of extracting 6cm-diameter solid-earth cores to depths of ten meters or more. It is a very efficient subsurface investigative strategy when the nature of sediments is unclear. In the ISUAL investigation of the US150/Lost River crossing, two Giddings cores were extracted as well as two hand-operated bucket auger samples (Holycross & Stafford 2000). Identified throughout the area were entisols developed in a thick mantle of historic alluvium. However, a well-developed paleosol with the potential for buried archaeological deposits was identified in the northwest project quadrant. Backhoe trenching was then recommended for this project quad (Holycross & Stafford 2000: 8; Holycross 2000), with an additional trench to be placed in the southwest project quad. No further investigations were recommended for the eastern half of the project area.

Soil-Geomorphic Setting

The project area is located in the Crawford Upland physiographic zone. This zone is characterized as a maturely dissected upland plateau with ridge and valley topography. Landforms within this part of the state consist of narrow interfluves and deeply incised drainages (Schnieder 1966). This portion of Orange County, which remained unglaciated during the Pleistocene, is representative of the Crawford Upland. The quad is dominated by a rugged ridge-and-valley system, with relief of 350' typical and a well-integrated dendritic drainage.

The ridge caprock is generally of the Pennsylvanian Raccoon Creek Group (sandstone, shale, & limestone) or the Mississippian (Chesterian Series) Stephensport and West Baden Groups (shale, sandstone, & limestone). The lithology of the ridge flanks consist of Mississippian Blue River Group carbonates (Gray 1989). Mantling bedrock within the project area are unconsolidated deposits which include Recent alluvium of the Martinsville Formation and Illinoian alluvium/colluvium/lacustrine sediments of the Prospect Formation. The latter are largely confined to the upper reaches of tributaries. No loess is mapped on the 1^0 x 2^0 geologic map of the area (Gray et al. 1970).

The western portion of the project is within the floodplain of the Lost River, a tributary of

the East Fork of the White River. The eastern portion of the project is located within the floodplain of the Lick Creek. The Lost River/Lick Creek confluence is located just south of an existing bridge carrying US 150 over the Lost River. Both drainages flow across floodplains largely devoid of relief and over 600 m wide in areas such as the Lick Creek/Upper Sulphur Creek confluence.

Soils of the general project area are of the Crider-Caneyville-Fredrick soil association, which are described as gently sloping to very steep, deep and moderately deep, well-drained soils that form in loess and underlying limestone residuum (Soil Survey Staff 1984). More specifically, mapped soil types include: Haymond silt loam (Hd), Wakeland silt loam (Wa), and Wilbur silt loam (Wr). These are Inceptisols (Haymond silt loam and Wilbur silt loam) and an Entisol (Wakeland silt loam), or relatively young soils, with moderate to poorly developed horizonation, respectively. Haymond silt loam is a nearly level, well drained soil on bottom lands that is subject to frequent flooding (Soil Survey Staff 1984). It is characterized by an Ap-Bw1-Bw2-C profile. Haymond series soils are described as occurring on floodplains, floodplain steps, and natural levees (Soil Survey Division 2001). Haymond silt loam is along active drainage channels and extensive portions of the Lost River and Lick Creek floodplains, making it the dominate alluvial soil mapped in this area of the valley. Wakeland silt loam is a nearly level, somewhat poorly drained soil on bottom lands that is frequently flooded (Soil Survey Staff 1984). The typical pedon described for Wakeland silt loam is Ap-Cg (Soil Survey Division 2001). Wakeland series soils are described as occurring on nearly level floodplains and lower lying floodplain steps (Soil Survey Division 2001). Mapped locations for these soils in the project area generally coincides with this description of their geographic setting. Wilbur silt loam is a nearly level, moderately well drained soil on bottom lands that is subject to frequent flooding (Soil Survey Staff 1984). A typical pedon for Wilbur silt loam is described as Ap-Bw1-Bw2-Cg (Soil Survey Division 2001). Information regarding the geographic setting of the Wilbur series soils is conflicting. They are described as occurring on both lower lying floodplain steps and higher floodplain steps and levees (Soil Survey Division 2001). Field observations suggest these soils are mapped as occurring in areas that are somewhat depressional in this portion of the valley.

Lick Creek Valley

The headwaters of Lick Creek begin about twenty linear kilometers to the southeast of Prospect. Its meandering valley is deeply entrenched into the Crawford Upland, with bluff walls ranging 150'-250' above the valley floor. The presence of upland outliers and a potential pre-Wisconsin bedrock terrace system *may* reflect a relict course of a Pleistocene (?) drainage, though Lick Creek apparently did not serve as a glacial sluice (Thornbury 1950). This basin flows across lithologic units of the Blue River Group to the east, and the Stephensport Group to the west. The project area proper is generally underlain by the latter.

The Lick Creek basin is about 25 river-kilometers in length, or about 15km linear kilometers in length. Draining from ridgetops, the Lick Creek valley is particularly narrow and v-shaped until it reaches Paoli, where the valley broadens to ± 200m-300m. It meanders tightly within the confines

of the bedrock walls, and the channel usually hugs the valley wall. The valley abruptly widens about 22km downstream (at a point about three kilometers east of its confluence with Lost River), which roughly coincides with the eastern terminus of this project. In this segment, valley widths range between 400m-500m, even up to 700m. In this same juncture, a tangled confluence of several streams is met; two divergent channels of Upper Sulphur Creek (separated by 475m) which flow into Lick Creek; and the Lick Creek-Lost River confluence itself, some 440m west of the Upper Sulphur Creek. A controlling factor for this geometry may be represented by the valley of Upper Sulphur Creek, which serves to demarcate the strike line of another geologic unit, the less erosionally resistant Stephensport Group.

A bedrock terrace system becomes evident about two kilometers downstream from Paoli, developed within the Blue River lithology. Their development is likely to be very early, almost certainly pre-Holocene. While the terrace elevations change through the length of the valley due to the gradient, they range up to 10m-12.5m in elevation above the valley floor. Upland/bedrock terrace outliers commonly occur on the floodplain, isolated from the parent bluffline in the process of earlier downcutting. The terraces and outliers are readily distinguished by the presence of mature alfisols of the Caneyville-Crider and Bartle associations. The terrace system is conspicuously absent in the general project area near Lost River. This absence is likely a function of the geology, in that the non-resistant units of the Stephensport Group that may have formed bedrock terraces have been scoured away by Lick Creek. The presence of the outliers serves as some measure of confirmation of the former presence of such landforms and of the processes leading to their erosion. Examples of the outliers exist in the form of the mass at 520' amsl between the forks of Upper Sulphur Creek and the monadnock just north of US150 west of Lost River.

The Lick Creek gradient drops some 24.4m in the 25 river-kilometers between Paoli and its confluence with Lost River for an average of about 1m drop per kilometer. This indicates a sluggish modern regime. In the distant "geologic" past, Lick Creek was in a downcutting and transport mode as evidenced by the bedrock terrace features. In the more recent geologic past, perhaps in the Late Holocene to even the Historic period, it is in more of an aggrading, sediment storage mode. The sluggish nature is reflected in the meandering course of the creek, and the storage mode is emphasized by the predilection of the channel to hug the valley walls. The Wakeland soils mapped in the vicinity of the Lick Creek-Lost River confluence have the geometry of a flood basin, Wakeland being an entisol with an A-gleyed C profile. The gleys, of course, are indicative of poorly drained character with high water tables.

Methodology of Investigation

The US-150 project area was investigated on June 4 through 6, 2003. Sediment recovery necessary for soil-geomorphic interpretation within the project area was facilitated by means of 120 cm x 6 cm solid cores and augering with a Giddings trailer-mounted hydraulic probe. Eight solid

cores and auger samples were obtained from the north and south sides of US150 within a core placement pattern that essentially forms an east-west transect across this project area (Figure 2). A sampling regimen was designed taking into consideration: 1) the mapping of the different alluvial soils within the project area, 2) environmental constraints such as the location of the drainage channels and a narrow proposed right-of-way, 3) areas that had been previously tested or recommended for additional testing. Due to the problem of identifying discrete landforms in the field, sampling focused on testing the different alluvial soil types, using soils as a proxy for landforms. It should be re-emphasized that all landform types were tested as they occurred along the right-of-way. While geographic gaps seem to appear in the sampling procedure, the underlying reason would be that those areas were simply not accessible for coring, given the trailer-mounted transport of the Giddings rig (swampy, abutted against bluff, steep embankments between road and drainage, etc). A more specific example would be in what is interpreted as a floodbasin developed in Wakeland soil located between Prospect and Lost River. This area was ponded at the time of examination.

Five cores were extracted from areas mapped as Haymond silt loam, two from Wakeland silt loam, and one from an area of Wilbur silt loam. Sampling was continued until refusal on coarse-grained sediments or contact with ground water which precluded recovery of additional sediment samples. Ground water was encountered at depths ranging between ca. 1.5 m (US150 - Core 7) and 3.7 m (US150 - Core 5), and the maximum depth of sampling was 4.8 m (US150-Core 5). Upon completion of coring, mean UTM coordinates were obtained by plotting the coring location by using a Trimble GeoExplorer handheld GPS unit and differential correction software.

All sediment samples were transported back to ISUAL and solid cores were examined with regard to texture, color (moist Munsell), structure, mottling, inclusions, boundary, and depth. The inspection of disturbed auger samples was limited to texture, color, inclusions, boundary and depth, due to restrictions imposed by this sampling procedure. During these examinations morphological and weathering characteristics were analyzed as possible age indicators per models developed by Bettis (1992) and Stafford and Creasman (1998). Sediment textures were utilized as indices of depositional environments. Data generated through the examination of the recovered sediments was then evaluated to determine potential for the incorporation of archaeological deposits and the necessity for additional subsurface testing. Detailed descriptions of auger and core samples, based on standard USDA soil terminology (Soil Survey Division Staff 1993), are provided in the tables below.

US150-Core 1 (Lost River Floodplain) UTM 533,919E - 4,270,116N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-33	Dark brown (10YR3/3) silty clay loam Moderate, fine to medium, granular structure Clear boundary No HCL reaction	Ap
33-49	Dark yellowish brown (10YR4/4) silty clay loam Weak, fine, sub-angular blocky structure Few, fine, distinct, brown (7.5YR4/3) mottles Clear boundary No HCL reaction	Bw
49-325	Dark yellowish brown (10YR4/4) silty clay loam (49-275 bs) Few, fine to medium, distinct, brown (7.5YR4/4) mottles many to common, prominent, gray (10YR6/1) krotivinia Few, prominent, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction --- Dark yellowish brown (10YR 4/4) clay loam (275-325 bs) Common, prominent, gray (10YR6/1) krotivinia Few, fine, prominent, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction	C
ca. 300-325 cm bs Groundwater		

US150-Core 2 (Lost River Floodplain) UTM 534,569E - 4,270,213N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-33	Dark brown (10YR3/3) silty clay loam Moderate, fine to medium, granular structure Clear boundary No HCL reaction	Ap
33-51	Dark yellowish brown (10YR4/4) silty clay loam Weak to moderate, fine, sub-angular blocky structure Few, fine, faint, dark yellowish brown (10YR4/6) mottles Few, distinct, gray (10YR6/1) krotivina Clear boundary No HCL reaction	Bw
51-240	Dark yellowish brown (10YR 4/4) silty clay loam Few, fine to medium, faint, brown (7.5YR4/4) mottles Few fine to coarse, black (10YR2/1) manganese accumulations Few to many, distinct, gray (10YR6/1) krotivina Massive No HCL reaction	C
240 cm bs Groundwater		

US150-Core 3 (Lost River Floodplain) UTM 534,649E - 4,270,316N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-29	Dark brown (10YR3/3) silty clay loam Moderate, fine to medium, granular structure Clear boundary No HCL reaction	Ap
29-44	Brown (10YR4/3) silt loam Moderate, very fine, sub-angular blocky structure Few, fine, faint, dark brown (7.5YR3/3) mottles Clear boundary No HCL reaction	Bw1
44-95	Grayish brown (10YR5/2) silty clay loam Very fine, weak, subangular blocky structure Few, medium, distinct, brown (7.5YR4/4) mottles Few, distinct, medium, black (10YR 2/1) manganese accumulations No HCL reaction	Bw2
95-360	Brown (10YR5/3) to pale brown (10YR6/3) silt loam to silty clay loam fining down sequence Few to common, faint to distinct, fine to coarse (strong brown) 7.5YR5/6 mottles Few, fine to medium, distinct, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction	C
ca. 300-325 cm bs Groundwater		

US150-Core 4 (Lost River/Lick Creek Floodplain) UTM 535,303E - 4,270,476N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-22	Dark brown (10YR3/3) silt loam Moderate, medium, granular structure Clear boundary No HCL reaction	Ap
22-45	Dark yellowish brown (10YR4/4) silt loam Moderate, very fine, sub-angular blocky structure Clear boundary No HCL reaction	Bw1
45-66	Brown (10YR4/3) silty clay loam Weak, very fine, sub-angular blocky structure Clear Boundary No HCL reaction	Bw2
66-360	Brown (10YR4/3) to dark yellowish brown (10YR 4/6) silty clay loam, clay loam, sandy loam bedding sequence Few, faint, fine to coarse 7.5YR5/6 mottles Few to common, prominent, light brownish gray (10YR6/2) krotivinia Few, fine to medium, prominent, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction	C
ca. 360 cm bs Refusal on coarse sediments		

US150-Core 5 (Lick Creek Floodplain) UTM 535,424E - 4,270,564N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-29	Dark brown (10YR3/3) silt loam Moderate, fine to medium, granular structure Abrupt boundary No HCL reaction	Ap
29-67	Dark yellowish brown (10YR3/4) silty clay loam Weak, fine, sub-angular blocky structure Few, fine, distinct, strong brown (7.5YR5/6) mottles Few, fine, distinct, black(10YR2/1) manganese accumulations Clear boundary No HCL reaction	Bw1
67-97	Dark grayish brown (10YR4/2) silt loam Weak, fine, sub-angular blocky structure No HCL reaction	Bw2
97-480	Brown (10YR4/3) to dark yellowish brown (10YR4/6) Silt loam to Silty clay loam Common, faint, fine to medium strong brown (7.5YR5/6) mottles Few to many prominent to distinct light brownish gray (10YR6/2) krotivina Few, fine, prominent, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction	C
ca. 370 cm bs Groundwater		

US150-Core 6 (Lick Creek Floodplain) UTM 536,374E - 4,270,377N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-35	Dark yellowish brown (10YR4/4) silt loam Moderate to weak, medium, granular structure Clear boundary No HCL reaction	Ap
35-360	Light brownish gray (10YR6/2) silt loam Common to many, fine to coarse, distinct to prominent strong brown (7.5YR5/6) to dark yellowish brown (10YR4/6) mottles Many very fine to coarse, prominent, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction	C
ca. 250 cm bs Groundwater		

US150-Core 7 (Lick Creek Floodplain) UTM 536,583E - 4,270,295N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-30	Dark brown (10YR3/3) silty clay loam Moderate, fine, granular structure Clear boundary No HCL reaction	Ap
30-50	Dark yellowish brown (10YR4/4) silt loam Weak, fine, sub-angular blocky structure Few to common, fine to medium, distinct, strong brown (7.5YR4/6) mottles Many prominent, gray (10YR6/1) krotivinia Few, fine to medium, distinct black (10YR2/1) manganese accumulations Clear boundary No HCL reaction	Bw
50-240	Dark yellowish brown (10YR4/4) silty clay loam Few, medium, prominent, brown (7.5YR4/4) mottles many, prominent, gray (10YR6/1) krotivinia Few, fine to medium, prominent, black (10YR 2/1) manganese accumulations Massive structure No HCL reaction	C
ca. 150 cm bs Groundwater		

US150-Core 8 (Lick Creek Floodplain) UTM 537,393E - 4,270,244N		
Depth (cmbs)	**Sediment Properties**	**Soil Horizon**
0-35	Dark yellowish brown (10YR3/4) silty clay loam Weak, fine to medium, granular structure Clear boundary No HCL reaction	Ap
35-62	Dark yellowish brown (10YR3/4) silty clay loam Massive structure Clear boundary No HCL reaction	C
62-120	Dark brown (10YR3/3) silty clay loam Strong, fine to medium granular structure Lower boundary indeterminable No HCL reaction	Ab
120-360	Dark yellowish brown (10YR3/4) silty clay loam to silt loam Few to common, gray (10YR5/1) krotivina Massive structure No HCL reaction	C
ca. 300-325 cm bs Groundwater		

Results

There are certain limitations in a study of this kind, though unavoidable under the circumstances. Foremost, coring was restricted to areas within the proposed right-of-way within a major section of alluvial valley. To fully evaluate the alluvial processes and capabilities of a segment of this magnitude, a cross-section of the entire width of the valley would be needed, optimally at several junctures. Therefore, those areas cored represent a restricted subset of landforms within this valley, and as such, some interpretations can be tenuous. Second, models developed by Bettis (1992; see also Bettis and Hajic 1995) and Stafford and Creasman (1998) were adapted for this project, though those studies were undertaken in valleys of much greater magnitude (e.g., Mississippi, Ohio, and Illinois Rivers) than that of Lick Creek. The degree to which those alluvial

and pedologic processes are applicable to small upland valleys is simply not yet fully known. Research syntheses of alluvial processes in small upland valleys is scant. Soil/sediment/landform characteristics within larger drainages are derived from the interaction of much more diversified and complex regional-level variables. The soil/sediment/landform properties of smaller drainages such as Lick Creek may differ somewhat from those models as they may be more profoundly impacted by more local influences. Yet a third problem was that the descriptions of mapped soils (Soil Survey Staff 1984, online USDA/NRCS Soil Survey Division *Official Soil Series Description Data Access*) did not always match with field observations, leading one to consider the possibility of mis-mapped soils, which of course could have significant ramifications in environmental interpretation.

The profiles of Cores 1-7 are similar. The alluvium is dominated by dark colored, fine-grained sediments (silty clay loam, silt loam, clay loam, and loam) representing gentle overbank deposition punctuated by higher-energy, coarse-grained sedimentation (sandy loam basal deposits in Core 4). Observed pedogenesis in this alluvium is very limited (A-C) to moderate (A-Bw-C) with medium to thick bedding. The identified cambic B horizons (Bw) displays only weak to moderately developed structural characteristics. These properties are consistent with mapped Inceptisols and Entisols. Weathering characteristics such as oxidation and mottling were observed, which in the Bettis (1992) and Stafford and Creasman (1998) large-basin models state are more typical of maturing soils, perhaps as early as middle Holocene. Mottling, on the other hand can reflect higher or fluctuating water tables in more recent sediments. In the small Lick Creek valley, with an expansive floodbasin (of Wakeland silt loam) near Lost River, the mottling is more likely attributable to the general low-lying topography, routinely high water, and poor drainage characteristics. Regardless of age of the sediments/soils, such conditions usually preclude intensive prehistoric occupation or sites that are more likely to be eligible for the State and National Registers of Historic Places.

Observed within Core 8 and in the earlier study of the Lost River/US150 crossing (Holycross & Stafford 2000) was a buried soil covered by recent alluvium. The underlying unit is characterized by fine-grained sediments (silty clay loam) which indicate a low-energy depositional environment (overbank deposits). Observed pedogenesis within the soil developed in the alluvium also appears to be weak. The soil profile consists of the buried A (Ab) apparently overlying a C horizon. Identification of the basal depth of the buried A horizon and certain characteristics of underlying deposits are somewhat tenuous. It was necessary to employ augering when sampling at depths near the probable base of the buried A and its interface with the underlying stratum. Inherent limitations of the augering procedure include the loss of structural characteristics, and horizon boundaries are not typically left intact.

Cores 1-7 indicate that poorly drained sediments make up the bulk of the alluvium (to a depth greater than 3 m) associated with recent overbank deposition by Lost River and/or Lick Creek. This correlates with soils mapped across the project area which are classified as entisols and inceptisols

(Haymond, Wakeland, and Wilbur silt loam). However, sediments recovered in Core 8 only consists of a thin veneer of recent material (< 1 m). In this core, historic alluvium buries older Holocene alluvial deposits, and a buried soil was found developed in the upper portion of these older deposits. The presence of a buried solum indicates a considerable period of stability that would have been attractive to prehistoric Native Americans. Additionally, the fine-grained nature of the deposits within alluvial units means any archaeological deposits that may be present should be within a primary context.

Recommendation

Project results were not as definitive as expected. The Giddings coring should be viewed as a preliminary assessment of buried site potential. As such, potential has been identified in *certain* areas. However, data gaps became evident only after assessment was made of the extracted cores. These gaps originate in part in the non-conformity of observed sediments and soils as opposed to those that are mapped. Because of this, the factors which underlie the distribution of buried soils is not completely understood. To make a secure evaluation, further geoarchaeological investigations will be necessary. While it would be convenient if recommendations for further testing were based solely on the distribution of certain soil types, the discrepancies described above preclude a testing regimen based solely on the mapped soil distributions.

In this study, age of the sediments is not used as the criteria for the recommendation of further work or not. Certainly, Late Holocene alluvium could contain buried deposits, and Historic alluvium could overlie earlier surfaces which supported archaeological sites. While we are cognizant of such potential, we feel that the evidence of poor drainage (mottling) is compelling rationale to postulate that such potential is minimal.

Areas in which significant mottling in entisol and inceptisol solums should be exempted from further local evaluation, as mottling is taken to be an indicator of high water tables and general poor drainage. Most of the area west of the Lost River obviously serves as a poorly drained floodbasin, and indeed was flooded at the time of examination; that area should clearly be exempt from further investigation. Much of the remainder of the project line has minimal potential as well, with a few exceptions.

The presence of a buried soil that has developed in older Holocene alluvium (with fine grained sediment characteristics) in the project area east of the Section 30 line (Core 8) indicates: 1) low-energy deposition typical of overbank deposits, 2) a substantial period of surface stability, and 3) is old enough to contain prehistoric occupations. Therefore, this alluvium has the potential to contain buried in-situ cultural deposits. This evaluation only estimates the *geomorphic potential* of this alluvium to contain prehistoric deposits. There can be other factors (e.g., rare prehistoric use of a location or region) that may preclude the actual presence or discovery of buried occupations.

Based on the above observations, it is recommended to excavate a series of backhoe at 50 m intervals from the point where US150 abuts the bluff edge (approximately the Section 30 line) to the eastern project terminus (Figure 3). Trenching should focus on defining the vertical and horizontal extent of the older Holocene alluvial unit and associated buried soil identified in Core 8 and any buried prehistoric remains that might be present.

Backhoe trenching should be conducted in accordance with DHPA Guidelines and OSHA standards. A toothless bucket should be utilized to excavate 5m x 3 m deep trenches. Screened 50 x 50 cm sample columns should be employed where the presence or absence of cultural deposits cannot be determined on macroscopic or field evidence. Trench profiles should be examined and recorded by qualified personnel. All trench locations should be mapped based on a permanent datum. In the event cultural materials are identified during this Phase Ic investigation, all such artifacts would be collected unless densities are too high for total recovery in which case a suitable sample be collected. In the event that human remains are encountered during subsurface testing, project activities should immediately cease and the DHPA notified within two business days (per Ic 14-21-1).

This recommendation is made independent of those made earlier for the replacement of the structure carrying US150 over the Lost River (Holycross & Stafford 2000). Additional testing recommended in the area of the aforementioned structure should be conducted as previously indicated in the report and work plan submitted by this facility.

Verification of posited poorly drained soils is needed in a few "data gaps" (outside of those inaccessible areas), to be tested via single backhoe trenches in the manner described above. As stated in the Procedures section of this report, core locations were predicated on the distribution patterns of soil types, used a proxies for landforms. While it is believed that such a strategy achieved the goal of testing all landform types within the project area as they occurred, certain geographic gaps were recognized after analysis of the original cores. That analysis resulted in the identification of ambiguities between mapped soil types and soil types observed in the field, and emphasized the unpredictable distribution of buried soils. As such, the ISUAL proposes to conduct trenching in these areas if accessible. These areas are plotted in Figure 3, and correspond to:

- a tract on the north side of US150 east of CR725W, in the NW¼ of Sec. 25 (east of Core 5, west of Core 6)
- on a small, triangular wedge between US150 and Lick Creek, in the center of Sec. 25 (just SE of core 7)

Lastly, if buried archaeological deposits are encountered anywhere within the project area under any circumstance, all activity in the area should immediately cease. A qualified geoarchaeologist should then be notified for an onsite assessment. Such deposits may take the form of, but are not limited to, artifact concentrations, midden, features, human burials, or buried/stratified

deposits in alluvial/colluvial matrices. If human remains are encountered, they will be treated in accordance with IC 14-21-1 and 312 IAC 21, and promptly reported to DHPA.

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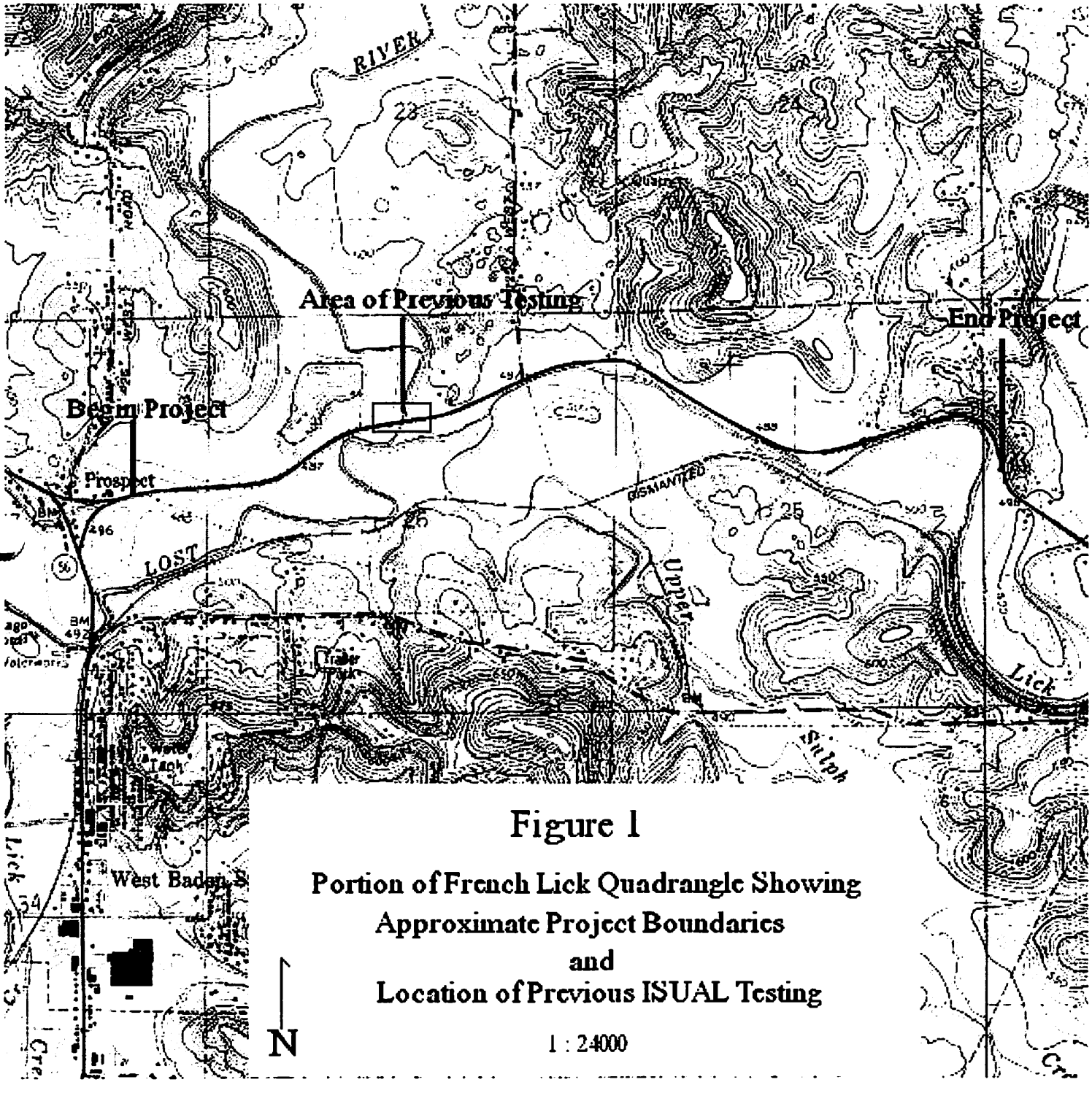

Figure 1

Portion of French Lick Quadrangle Showing Approximate Project Boundaries and Location of Previous ISUAL Testing

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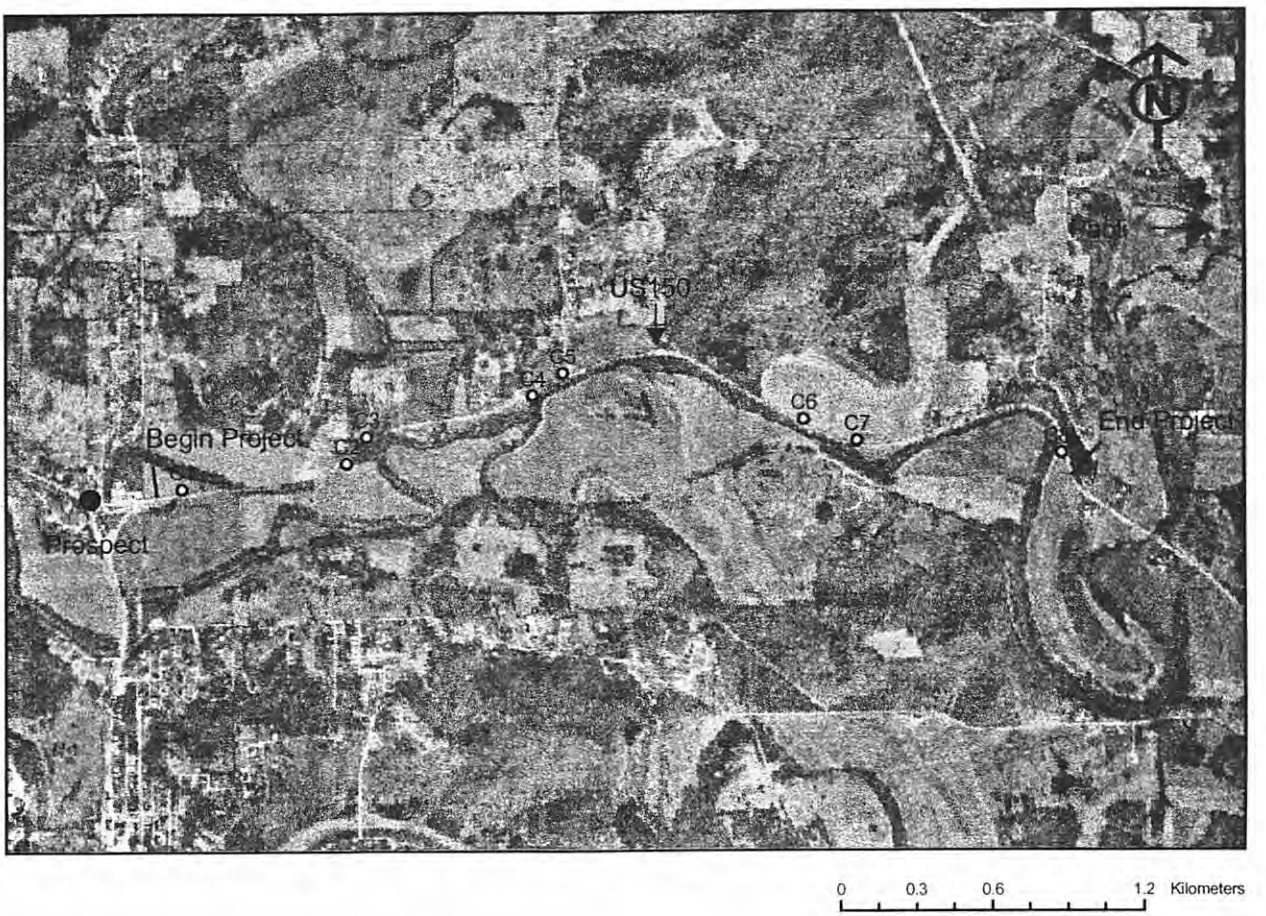
Figure 2

Portion of French Lick Quadrangle Showing Approximate US150 Project Area and Location of Recovered Cores



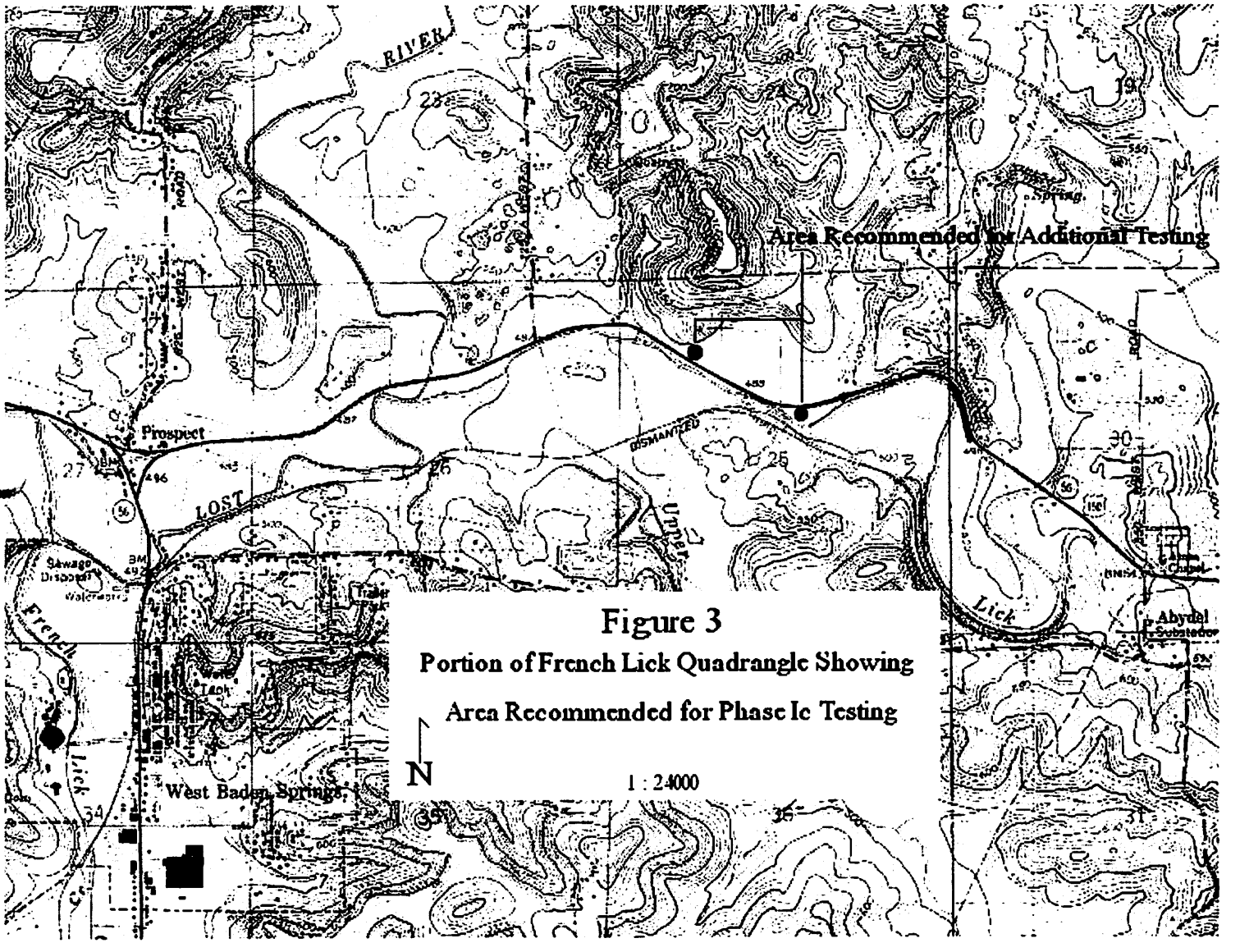


Figure 3

Portion of French Lick Quadrangle Showing

Area Recommended for Phase Ic Testing

Proposal to Conduct Additional Phase Ic Geoarchaeological Investigations of Selected Areas Along US150 in the Lick Creek Basin, Related to INDOT Project STP-024-4, Orange County, Indiana

Submitted to

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By

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January 14, 2004

Proposal to Conduct Additional Phase Ic Geoarchaeological Investigations of Selected Areas Along US150 in the Lick Creek Basin, Related to INDOT Project STP-024-4, Orange County, Indiana

Project Description and History of Investigations

On behalf of the Indiana Department of Transportation, Butler, Fairman, & Seufert Consulting Engineers are involved with the design of a proposed highway improvements along US150 west of Paoli. The segment of US150 examined in this project begins at the SR56 interchange at Prospect, and continues some 4.2km to the east. This line passes through Secs. 25, 26, and 27, T2N R2W, and Sec. 30, T2N R1W, in French Lick Twp., Orange County, Indiana, as shown on the USGS 7.5' French Lick topographic map (Figure 1).

The ISUAL was contracted to perform a georachaeological evaluation of this project (Holycross, Cantin, & Stafford 2003). The US150 segment traverses a portion of the Lick Creek valley. From data recovered in eight solid-earth cores extracted by a Giddings hydraulic soil probe, an assessment of the potential for buried cultural deposits was made based on the sediments/soils represented, the associated landforms, and the geomorphic processes responsible for this landscape.

Project Results and Recommendation

The ISUAL recommends three individual areas for additional geomorphic assessment. These areas are:

1. A 240m long segment in the vicinity of Core 8 near the west line of Section 30
2. A tract on the north side of US150 east of CR725W, in the NW¼ of Sec. 25 (east of Core 5, west of Core 6)
3. A small, triangular wedge between US150 and Lick Creek, in the center of Sec. 25 (just SE of core 7)

In the original geoarchaeological investigation, the ISUAL extracted a series of eight solid-earth Giddings cores from various locales within the project area, designed to sample all landform and soil types. Sediment profiles within seven of the cores, designated as Cores 1 through 7, demonstrated little potential for buried cultural deposits, and recommendations were made for no further investigations of those areas (Holycross et al 2003). However, in the vicinity of Core 8, located near the east end of the project line, a buried soil was identified. It had developed in older Holocene fine grained alluvium which indicates: 1) low-energy deposition typical of overbank deposits, 2) a substantial period of surface stability, and 3) is old enough to contain prehistoric occupations. Therefore, this alluvium has the potential to contain buried in-situ cultural deposits. This evaluation only estimates the *geomorphic potential* of this alluvium to contain prehistoric deposits. There can be other factors (e.g., rare prehistoric use of a location or region) that may preclude the actual presence or discovery of buried occupations.

Based on the above observations, it is recommended to excavate a series of six backhoe trenches at

60 m intervals from the point where US150 abuts the bluff edge (approximately the Section 30 line) to the eastern project terminus, a segment approximately 240m long (Figure 1). Trenching should focus on defining the vertical and horizontal extent of the older Holocene alluvial unit and associated buried soil identified in Core 8 and any buried prehistoric remains that might be present.

In the course of the original geoarchaeological investigation, core locations were predicated on the distribution patterns of soil types, used a proxies for landforms. While it is believed that such a strategy achieved the goal of testing all landform types within the project area as they occurred, certain geographic "data gaps" were recognized after analysis of the original cores. That analysis resulted in the identification of ambiguities between mapped soil types and soil types observed in the field, and emphasized the unpredictable distribution of buried soils. As such, two "data gaps" are identified. The two locales are to be trenched for verification of posited poorly drained soils. A single backhoe trench per "data gap" locale should be sufficient.

Backhoe trenching should be conducted in accordance with DHPA Guidelines and OSHA standards. A toothless bucket should be utilized to excavate 5m x 3 m deep trenches. Screened 50 x 50 cm sample columns should be employed where the presence or absence of cultural deposits cannot be determined on macroscopic or field evidence. Trench profiles should be examined and recorded by qualified personnel. All trench locations should be mapped based on a permanent datum. In the event cultural materials are identified during this Phase Ic investigation, all such artifacts would be collected unless densities are too high for total recovery in which case a suitable sample be collected. In the event that human remains are encountered during subsurface testing, project activities should immediately cease and the DHPA notified within two business days (per Ic 14-21-1).

Lastly, if buried archaeological deposits are encountered anywhere within the project area under any circumstance, all activity in the area should immediately cease. A qualified geoarchaeologist should then be notified for an onsite assessment. Such deposits may take the form of, but are not limited to, artifact concentrations, midden, features, human burials, or buried/stratified deposits in alluvial/colluvial matrices. If human remains are encountered, they will be treated in accordance with IC 14-21-1 and 312 IAC 21, and promptly reported to DHPA.

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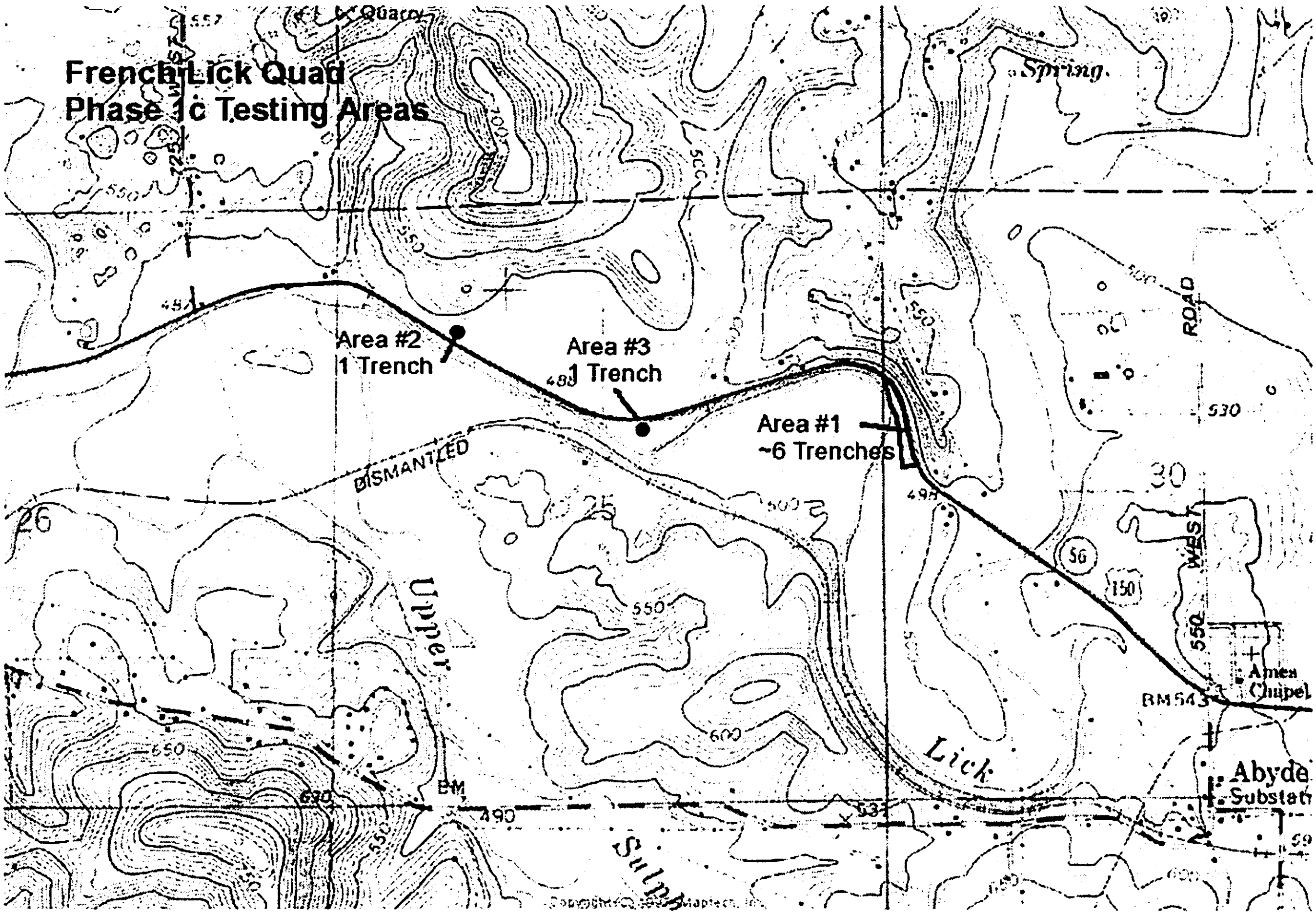
French Lick Quad
Phase 1c Testing Areas
Area #2
1 Trench
Area #3
1 Trench
Area #1
~6 Trenches
Quarry
Spring
DISMANTLED
Upper
Lick
ROAD
WEST
Amen Chapel
Abyde
Substati
BM543
56
150
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25
30

GEOARCHAEOLOGICAL SUBSURFACE INVESTIGATIONS OF SELECTED AREAS ALONG US150 RELATED TO INDOT PROJECT STP-024-4 ORANGE COUNTY, INDIANA

By

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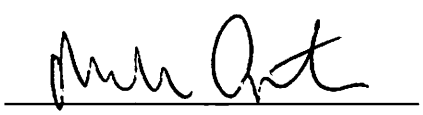

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June 21, 2004

Indiana State University Anthropology Laboratory
Cultural Resource Management Report 04-14

C240

GEOARCHAEOLOGICAL SUBSURFACE INVESTIGATIONS OF SELECTED AREAS ALONG US150 RELATED TO INDOT PROJECT STP-024-4, ORANGE COUNTY, INDIANA

Project Description and History of Investigations

Butler, Fairman, & Seufert, are involved with engineering of proposed highway improvements along a 3.0 km segment of US150 (west of Paoli, Indiana) on behalf of the Indiana Department of Transportation. The existing right-of-way in the area is generally 9.1 m (30ft) on both sides of the centerline. The proposed project will expand the right-of-way to between 20 m (66 ft) and 40 m (131 ft) from the centerline.

During Phase Ia work in the proposed project area, Archaeological Consultants of the Midwest, Inc. (Jackson 2002) encountered alluvial soils and subsequently recommended a Phase Ic subsurface reconnaissance for a specific segment along US150, between CR590W and the US150-SR56 interchange near Prospect. ISUAL was requested to conduct an assessment of buried site potential, and rather than undertaking a conventional trenching project, this facility conducted a geomorphic evaluation via a Giddings hydraulic probe (Holycross, Cantin & Stafford 2003). Involved was a segment passing through both the Lost River and Lick Creek floodplains within portions of Sections 25, 26 and 30, T2N R2W, French Lick Twp., of the USGS French Lick Quadrangle.

Although, results were not as definitive as expected, two alluvial units were identified as a result of investigations of the US150 project area: 1) historic or post-settlement alluvium and 2) older Holocene alluvium. Soil profiles within seven of eight extracted cores reflected poorly drained sediments making up the bulk of alluvium associated with recent overbank deposition by the Lost River and/or Lick Creek precluding the necessity for additional testing in large areas of the project.

The identified older Holocene alluvium was characterized by fine-grained sediments and indicated a low-energy depositional environment. The soil profile of one core included a buried A (Ab) overlying an apparent C horizon. However, identification of the basal depth of the buried A horizon and certain characteristics of underlying deposits were somewhat tenuous. This was due to the necessity of employing auger sampling near the probable base of the buried A and the inherent limitations of this recovery procedure.

Based on these observations, Phase Ic subsurface testing was recommended with three areas east of CR725W proposed for further subsurface investigation (Figure 1). An approximate 240 m long segment, where US150 abuts the bluff edge (near the west line of Section 30) was to be the main focus of investigations. In this area, a series of trenches were to be excavated at 60 m intervals to the eastern terminus of the project. Trenching was to define the vertical and horizontal extent of the older Holocene alluvial unit (and associated buried soil) identified in the eastern portion of the project and any buried prehistoric remains that may be present.

Additionally, limited trenching was recommended to provide clarification where geographic "data gaps" were recognized resulting from ambiguities between mapped soils and those observed

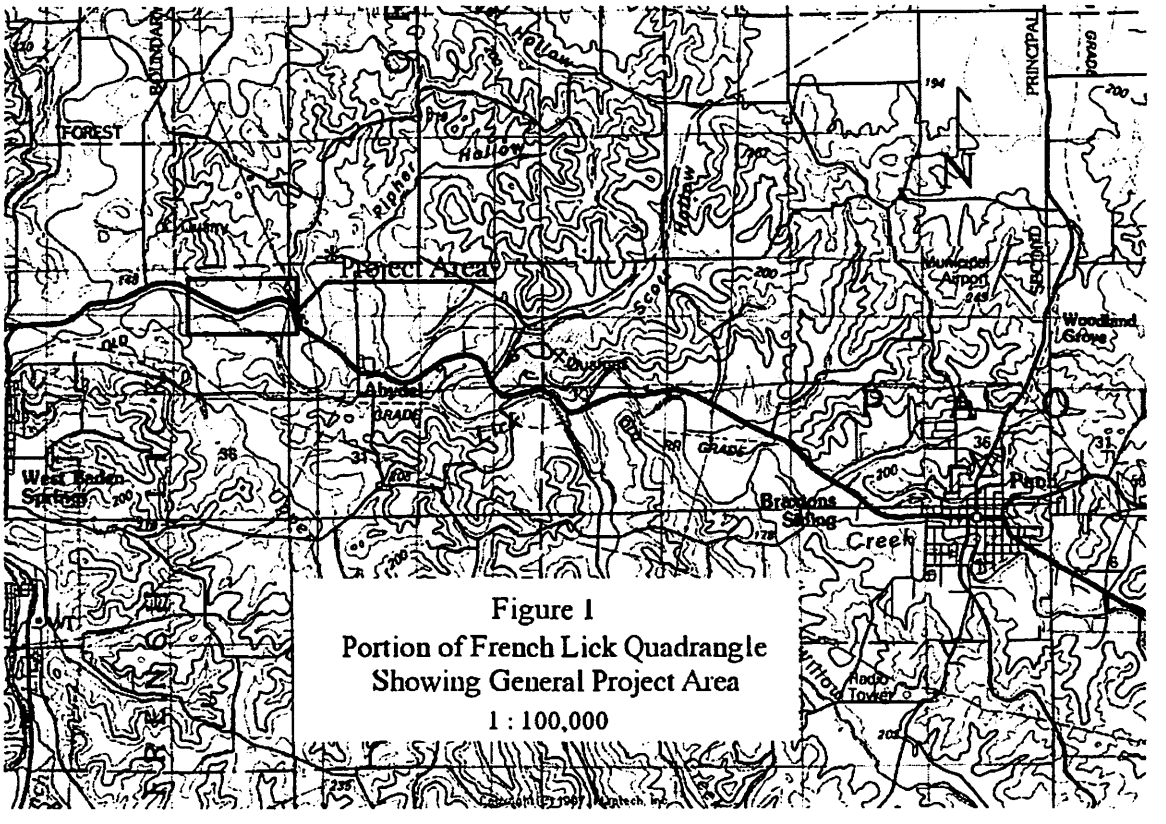

Figure 1
Portion of French Lick Quadrangle
Showing General Project Area
1 : 100,000

as a result of field work in the area. Two locales were to be trenched for verification of poorly drained soils, identified during earlier coring, with one trench per "data gap" locale proposed. These areas were: a tract on the north side of US150 (NW1/4 of Section 25) and a small triangular parcel between US150 and Lick Creek (center of Section 25). Involved are portions of Secs. 25 and 30, T2N R2W, French Lick Twp., as shown on the USGS 7.5' French Lick Quadrangle (Figure 2).

Natural and Cultural Setting

The project area is located in the Crawford Upland physiographic zone. This zone is characterized as a maturely dissected upland plateau with ridge and valley topography. Landforms within this part of the state consist of narrow interfluves and deeply incised drainages (Schnieder 1966). This portion of Orange County, which remained unglaciated during the Pleistocene, is representative of the Crawford Upland. The quad is dominated by a rugged ridge-and-valley system, with relief of 350' typical and a well-integrated dendritic drainage.

The ridge caprock is generally of the Pennsylvanian Raccoon Creek Group (sandstone, shale, & limestone) or the Mississippian (Chesterian Series) Stephensport and West Baden Groups (shale, sandstone, & limestone). The lithology of the ridge flanks consist of Mississippian Blue River Group carbonates (Gray 1989). Mantling bedrock within the project area are unconsolidated deposits which include Recent alluvium of the Martinsville Formation and Illinoian alluvium/colluvium/lacustrine sediments of the Prospect Formation. The latter are largely confined to the upper reaches of tributaries. No loess is mapped on the 1^0 x 2^0 geologic map of the area (Gray et al. 1970).

The project is located within the floodplain of the Lick Creek basin which is approximately 15 linear kilometers (25 river kilometers) in length. The Lick Creek headwaters begin about twenty linear kilometers southeast of Prospect and the Lost River/Lick Creek confluence is located just south of an existing bridge carrying US 150 over the Lost River. Lick Creek flows across a floodplain where upland outliers commonly occur in the form of bedrock terraces and occasional inselberg masses. This floodplain ranges from a few meters to over 600 m wide in areas such as the Lick Creek/Upper Sulphur Creek confluence.

Soils of the general project area are of the Crider-Caneyville-Fredrick soil association, which are described as gently sloping to very steep, deep and moderately deep, well-drained soils that form in loess and underlying limestone residuum (Soil Survey Staff 1984). More specifically, the mapped soil type for the parcels of concern is: Haymond silt loam, frequently flooded (Hd) an Inceptisol with weakly developed horizonation. Haymond silt loam is a nearly level, well drained soil on bottom lands that is subject to frequent flooding (Soil Survey Staff 1984). It is characterized by an Ap-Bw-C profile. Haymond series soils are described as occurring on floodplains, floodplain steps, and natural levees (Soil Survey Division 2001). Haymond silt loam is along active drainage channels and extensive portions of the Lost River and Lick Creek floodplains, making it the dominate alluvial soil

mapped in this area of the valley.

Presettlement vegetation varied in response to local and regional physiography (Lindsey et al. 1969; Sieber et al. 1989). Much of the Crawford Upland was dominated by climax oak-hickory forests. A significant exception would be in the valleys of major drainages where more mesic communities would have been established, where beech-maple stands would have been more prevalent, and beneath that canopy, a more varied understory composition. On a more local scale, ridge tops and south- and west-facing slopes would have supported oak-hickory assemblages, while north- and east-facing slopes were more mesophytic. The nearby Mitchell Plain would have supported a mesophytic community as well, and xeric "barrens" were established. The floral community would have provided a range of sustenance resources, including nuts, roots, tubers, berries, shoots, greens, and other fruits.

Most woodland and aquatic fauna native to Indiana would have inhabited this region (Mumford 1969; Sieber et al. 1989). Taxa critical to prehistoric subsistence included deer, raccoon, squirrel, turkey, waterfowl, sundry fish, turtle, and mollusc. Other fauna included various felid, canid, and ursid species. Bison entered the area late in the prehistoric sequence, ca. AD 1600.

Prehistoric cultures first entered the New World around 12,000-14,000 years ago. The first recognized cultural tradition is known as Paleoindian, which dates from that time to about 8000 BC. This tradition is characterized by well-made fluted points used to hunt large Pleistocene game in a near-nomadic settlement strategy. Following this was the Archaic tradition, which dates between 8000 BC and 1000 BC. These groups were generally egalitarian hunter-gatherers who exploited a broader range of subsistence goods, though deer, nuts, and aquatic species were heavily exploited. In the Midwest, there is a trend toward reduction of group mobility, and resources were more routinely moved to consumers by specialized task groups operating from strategically placed residential camps. With a reduction in mobility, food storage capabilities are constructed as a hedge against future shortages, though ceramic technology had yet to be developed. Intrasite structuring becomes more complex, with functionally distinct activity areas and features. The tool kit was expanded and became more specialized. The beginnings of trade networks were established, with cherts, copper, and marine shell being favored commodities. With the onset of the Woodland tradition (ca. 500 BC-AD 1000), the initial production of ceramic vessels signified a more sedentary lifestyle. Small permanent villages were established, facilitated by the advent of horticulture. Elaborate, institutionalized mortuary practices developed as best exemplified by burial mounds, though the differential disposition of the dead reflect the beginnings of ranked societies. Extensive trade networks involving exotic non-utilitarian goods also evolved. The Mississippian tradition, which spans the era between AD 1000-ca. 1650, witnesses a transition from horticultural subsistence to full-blown agriculture (maize, beans, and squash) to the near-exclusion of any other subsistence acquisition. Large stockaded villages were constructed, which is indicative of inter-group hostilities. The larger villages often included immense ceremonial mounds of various functions. The larger villages were supported by a network of outlying hamlets in a complex settlement system. Societies became clearly stratified at this point, with the priesthood class at the apex. The ceramic inventory becomes highly specialized, and extensive trade networks flourish. Mississippian culture persists

in some forms into the early Euroamerican Contact period in groups such as the Shawnee and Cherokee.

All periods of Indiana prehistory (Kellar 1983) are represented by archaeological sites in and adjacent to Orange County (Adams 1946; Munson 1980; Baltz 1986; Sieber et al. 1989; Redmond and McCullough 1993 & 1996). Perhaps most frequently identified are sites of Early Archaic (ca. 8000-6000 BC), late Middle Archaic (ca. 3500-2000 BC), Late Archaic (ca. 2000-1000 BC), and Oliver phase/Upper Mississippian (ca. AD 1000-1400) affiliations. A full range of site functional types from small short-term camps to more substantial villages, mortuary structures, and specialized extractive sites have been documented in and around the county.

Two Oliver sites within the general project area region have been recently excavated. The first is the 12Lr329, the Clampitt site (Redmond 1994), located in central Lawrence County. This one acre village site was ringed with at least one stockade, and possibly a second (though it could represent an episode of rebuilding). It was occupied from ca. AD 1276-1433, which is coeval with Fort Ancient groups of southeastern Indiana, and upstream along the Ohio. A large central plaza was defined which was virtually devoid of cultural materials and features, and homesteads were confined to the perimeter of the stockade. Subsistence evidence suggests that a major portion of the diet was based on maze, supplemented by a hunting/collecting economy.

The second site is 12Or1, Cox's Woods site (Sieber et al. 1989; Redmond and McCullough 1996), which is located about one mile east of Paoli, Orange County. It reportedly consisted of an earthen enclosure some 1200' in circumference, and possibly double-walled. Within the enclosure were numerous mounds. Mounds existed outside of the enclosure as well. It was initially test-excavated in the 1940s and 1950s by Jesuit priests from West Baden college, and in the 1990s by Indiana University (Redmond & McCullough 1993 & 1996).

Methodology of Investigation

The project area was investigated from March 26 to April 16, 2004 as progress was hampered by periods of inclement weather and landowner concerns. The crew consisted of the author (Project Supervisor), Susan Pearman and James Bays. Mark Cantin served as Principal Investigator.

In the course of the project, seven trenches were excavated (Figure 3). One trench (T1) was excavated within the tract on the north side of US150 (NW1/4 of Section 25) and one trench (T2) was excavated within the small triangular parcel between US150 and Lick Creek (center of Section 25). As previously discussed, the purpose of trenching in these areas was to verify poorly drained conditions, within these portions of the Lick Creek floodplain, as were observed from core samples extracted nearby.

Five trenches (T3-T7) were excavated on the south side of US150 where the road abuts the bluff edge (near the west line of Section 30) and the older Holocene alluvial unit was identified.