

**United States
Department of Agriculture
Forest Service**

1978

**CULTURAL RESOURCES SURVEY
HIAWATHA NATIONAL FOREST**

A CULTURAL RESOURCE SURVEY OF PORTIONS
OF HIAWATHA NATIONAL FOREST
ALGER, CHIPPEWA, DELTA, MACKINAC, AND
SCHOOLCRAFT COUNTIES, MICHIGAN

FINAL REPORT

CONTRACT NO. 53-56A1-8-00063

JANUARY 1979

SUBMITTED TO THE

USDA FOREST SERVICE
HIAWATHA NATIONAL FOREST
ESCANABA, MICHIGAN 49829

BY

COMMONWEALTH ASSOCIATES INC.
209 E. WASHINGTON AVENUE
JACKSON, MICHIGAN 49201

PRINCIPAL INVESTIGATOR
J. E. FITTING, Ph.D.
MANAGER
HUMAN RESOURCES PLANNING DEPT.

PROJECT MANAGER
J. G. FRANZEN
STAFF ARCHEOLOGIST

R-1999

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	
<u>Chapter</u>	
1 INTRODUCTION	1
2 THE SETTING	5
ENVIRONMENTAL BACKGROUND	5
CULTURAL BACKGROUND	9
3 METHODOLOGY	13
4 FINDINGS	17
ITEM AND SITE DESCRIPTIONS	17
CULTURAL MATERIAL	50
Euroamerican Ceramics	50
Glass	54
Metal Artifacts	56
Chipped Stone	58
SITE TYPES	74
5 PRELIMINARY EVALUATION OF SIGNIFICANCE	78
6 IMPACT EVALUATION	83
7 RECOMMENDATIONS	89
INDIVIDUALS CONSULTED OR INTERVIEWED	93
BIBLIOGRAPHY	94

LIST OF FIGURES

<u>Figures</u>		<u>Page</u>
1	SURVEY AREAS	2
2	CHIPPED STONE	65
3	CHIPPED AND PECKED STONE	69

LIST OF TABLES

<u>Table</u>		
1	EARTHENWARE DISTRIBUTION	51
2	BOTTLE GLASS DISTRIBUTION	55
3	OBSERVED METAL ARTIFACTS	57
4	COUNTS, TOTAL WEIGHTS, AND AVERAGE WEIGHTS OF ALL UNMODIFIED DEBITAGE	60
5	RAW MATERIAL FREQUENCIES	63
6	STONE TOOL AND CORE COUNTS	66
7	CHIPPED STONE DENSITY AND PERCENTAGES OF TOOLS AND CORES IN ASSEMBLAGES	73
8	HISTORIC SITE CHARACTERISTICS	77
9	IMPACT SUMMARY	84

LIST OF APPENDICES

Appendix

1	LETTER FROM STATE ARCHAEOLOGIST'S OFFICE
2	WEIGHTS AND MEASUREMENTS OF TOOLS AND CORES
3	LETTER FROM DR. W. A. LOVIS

LIST OF EXHIBITS

Exhibit

- A 2" = 1 Mile Township Maps
- A-1 RAPID RIVER RANGER DISTRICT
- A-2 MANISTIQUE RANGER DISTRICT
- A-3 MUNISING RANGER DISTRICT
- A-4 SAULT SAINTE MARIE RANGER DISTRICT
- A-5 ST. IGNACE RANGER DISTRICT
 (three sets)

- B USFS CULTURAL RESOURCE INVENTORY FORMS
- C PHOTOGRAPHS
- D FIELD NOTES AND OTHER RECORDS

ABSTRACT

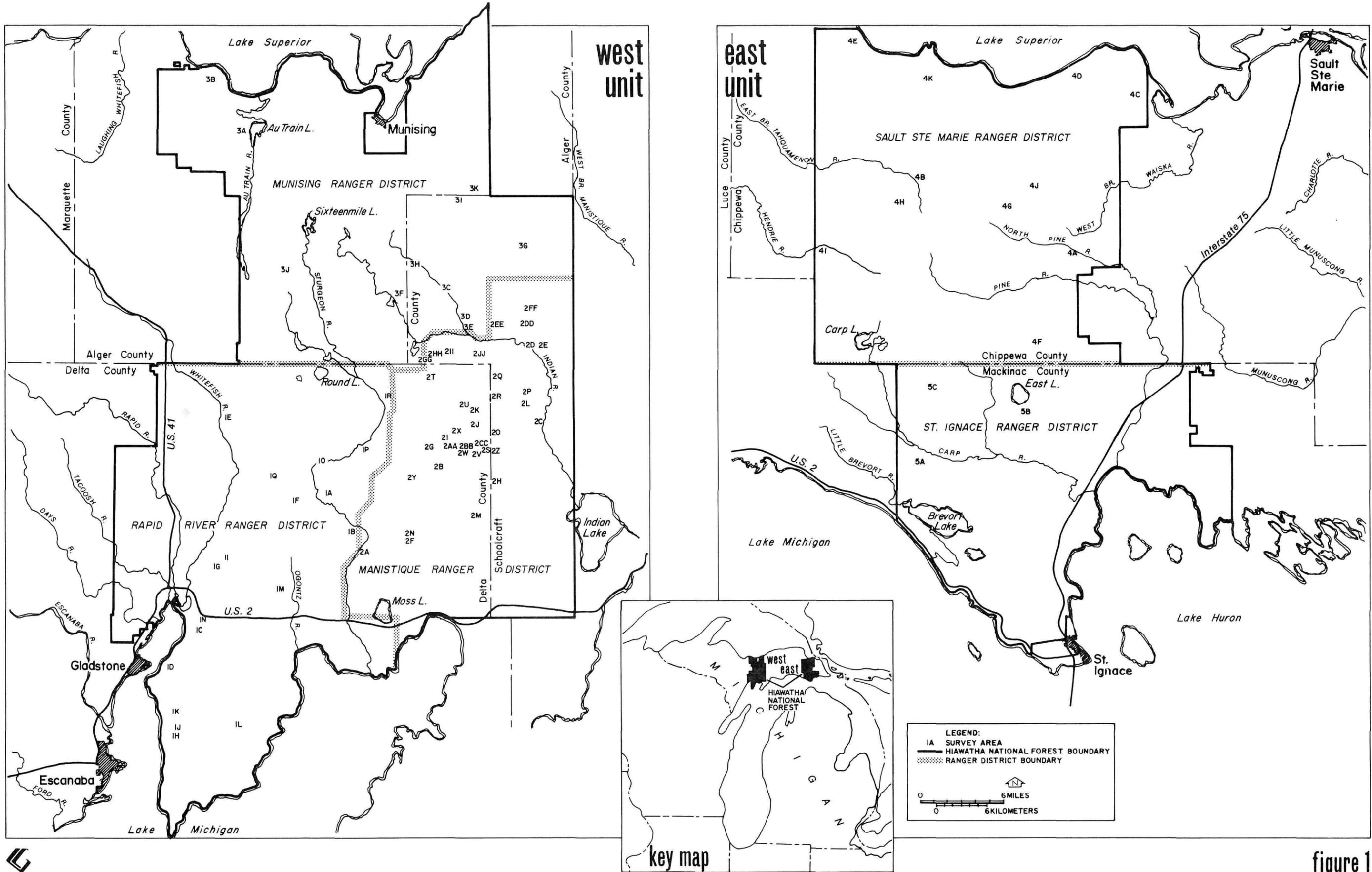
As part of its cultural resource management program, the U.S. Forest Service contracted with Commonwealth Associates Inc., to perform a cultural resource survey of portions of Hiawatha National Forest where land altering activities were planned. The field survey involved both complete and partial coverage using shovel tests excavated at 25 meter intervals along corridors spaced approximately 25 meters apart. In addition to field survey, all relevant existing records were reviewed and appropriate informants were consulted.

The survey resulted in the location of 13 prehistoric and 10 historic archeological sites within the project area. All of these prehistoric sites and most of the historic sites were previously unrecorded. The prehistoric sites are all chipped stone tool and debitage scatters along the shores of inland lakes, which may represent cold season camp sites. The historic sites located are primarily associated with the lumber industry and most appear to date between 1880 and 1935.

Based on their potential significance, as well as the forecasted impact of the planned undertakings, it is recommended that these cultural resources be avoided if possible. In addition, it is recommended that certain steps be taken to mitigate the effect of ongoing destructive processes such as erosion and vandalism. Additional survey is recommended for sensitive areas along inland lakes that were identified in the partial coverage survey, if these areas are to be disturbed.

CHAPTER 1
INTRODUCTION

This report presents the results of a Cultural Resource Survey of portions of Hiawatha National Forest, Michigan, conducted by Commonwealth Associates Inc., in accordance with Contract No. 53-56A1-8-00063, which was awarded August 29, 1978. This project was initiated by the United States Department of Agriculture, Forest Service, in order to meet its cultural resource management objectives. A number of project-specific areas which may be affected by proposed land management activities were investigated. This survey sought to identify, record, and provide a preliminary evaluation of historic and pre-historic sites occurring in these threatened areas, and to recommend appropriate alternative protective or mitigation measures. To accomplish these objectives, Commonwealth Associates Inc. reviewed existing information sources, conducted a field survey of the areas of proposed undertakings, and analyzed the resulting data. Prefield research was conducted between August 29 and September 5, 1978, and field research was conducted between September 5 and September 24, 1978. Individual areas of proposed undertakings that were investigated ranged from 40 to 1610 acres in extent. These areas were located in Alger, Chippewa, Delta, Mackinac, and Schoolcraft counties. Chapter 4 presents the locations and descriptions of these areas, while Figure 1 depicts their regional setting.



Compared to many areas in the Great Lakes region, relatively little archeological research has been conducted in the Hiawatha National Forest, and in the interior of the Upper Peninsula in general. Martin (1977:23-38), who has prepared an overview of archeological research in the eastern Upper Peninsula, suggests that the area is "poorly or not at all known archeologically" (1977:5). In general, only sporadic amateur collecting took place in the eastern Upper Peninsula in the late nineteenth and early twentieth centuries. The period spanning the late 1950s and the 1960s was marked by a significant period of professional research. Most of this research was conducted by the University of Michigan Museum of Anthropology. Their survey, testing, and excavation efforts account for most of what is currently known about the area's prehistory. During this period, and through the 1970s, the Straits of Mackinac and Chippewa County were the focus of research conducted by Michigan State University, the Michigan Department of Natural Resources, and the Michigan History Division. Professional survey and excavation coverage has been uneven, however, as evidenced by the lack of survey in interior areas of the eastern Upper Peninsula.

The most recent trend in eastern Upper Peninsula archeological research, of which this study is a part, has resulted from legislation requiring the investigation of cultural

resources that might be disturbed by projects either undertaken, or supported, by the federal government. This type of research has been conducted throughout the Upper Peninsula by universities, state agencies, and private firms. Although earlier research had established the general culture history of the area through the investigation of lacustrine environments, it has been only recently that interior areas have been investigated to any great extent. In particular, since 1975, the Michigan State University Museum has been contracted to undertake a series of project-specific investigations within Hiawatha National Forest. In addition, the Museum has contracted to examine the relationship between known sites and environmental zones and to formulate and test a predictive model based upon these relationships (Martin 1977). The objectives of this study are to identify areas of varying site potential and to suggest appropriate inventory and evaluation procedures for different zones. The first phase of this study has been completed and the resulting site distribution data were utilized in this cultural resource survey. The Phase II field research, testing Martin's locational hypotheses, was conducted during the summer of 1978 (Lovis, personal communication). Some resulting preliminary data were utilized in the preparation of this report.

CHAPTER 2

THE SETTING

ENVIRONMENTAL BACKGROUND

A consideration of natural environmental factors is potentially useful for understanding both prehistoric and historic cultural resource distributions in the eastern Upper Peninsula. However, this discussion will be brief and will focus on those natural characteristics currently thought to be most important in affecting human use of the area. More comprehensive information on the area's environment is available in Martin (1977) and the relevant primary sources.

In the northern portions of the eastern Upper Peninsula, bedrock exposures consist of Cambrian sandstones. Further south, Ordovician limestone formations are present but are largely covered by glacial drift. In the southern portion of the study area, there are extensive outcrops of Silurian rock. Silurian dolomites and limestones are probably the most culturally significant bedrock features in the study area. There is evidence that chert derived from Silurian formations was used extensively during prehistoric times for chipped stone tools (Brose 1970:96; Cleland and Peske 1968:46; Richner 1973:19; Franzen 1975:32; Luedtke 1976). During the historic period, Silurian dolomites and limestones were quarried extensively for cement,

lime for use as a flux in iron manufacture, road aggregate, building stone, paper filler, and agricultural lime (Dorr and Eschman 1970:105).

In most areas, bedrock formations are covered by a mantle of glacial deposits. Glacial and post-glacial events can be used to determine the earliest expected evidence of human occupation of the study area. The last advance of glacial ice into the Great Lakes area left the eastern Upper Peninsula covered by either ice or water until about 9500 years ago (Dorr and Eschman 1970:175). A series of post-glacial lake stages followed the glacial retreat. These stages resulted from outlet level changes brought about by the isostatic rebound of the earth's crust. Extinct shorelines of the lakes are potentially important for investigating early human use of the area. While the eastern Superior basin remained filled with ice, the Algonquin stage level of 605 feet above sea level occurred in the basins of Lakes Michigan and Huron. When the Superior basin was completely free of ice, the Lake Minong stage took place there. Following this brief stage, all the Upper Great Lakes drained down to a low water stage known as Lakes Houghton, Chippewa, and Stanley, in the Superior, Michigan, and Huron basins, respectively. About 4500 years ago as a

result of a gradual rise of the North Bay outlet from crustal rebound, the Upper Great Lakes rose to the Lake Nipissing elevation of 605 feet above sea level. It is thought that this rise in lake levels may have obliterated much of the evidence for human use of the area that occurred during earlier post-glacial periods (Martin 1977:15).

Existing landforms and topography in the eastern Upper Peninsula are also largely a result of glacial and post-glacial processes. Major surface features resulting from these processes include outwash plains, till plains, lake plains, moraines, floodplains, and glacial drainage ways. Drainage systems in many areas are poorly developed because of the irregular topography of these features. Undrained depressions, created by the haphazard melting of glacial ice and the presence of ice block pits or kettle holes, have resulted in many lakes and swamps. This is particularly evident in Manistique County.

Variations in the texture and relief of these glacially derived surface formations are major factors affecting soil formation in the eastern Upper Peninsula. In general, the soils of the eastern Upper Peninsula are characterized as limy podzols and bog soils typical of glaciated, cool-temperate, forested regions. Soils suitable

for agriculture are limited. For example, in the west portion of the study area, the soils in the southern and western parts of Delta County and the area around Chatham and Cooks are those most suitable for crop production (USDA 1977:79).

Most of eastern Upper Peninsula is forested with both deciduous and coniferous species present. The plant and animal species characteristic of the area are elements of the transitional community known as the Canadian Biotic Province (Dice 1943). Common trees in the area include sugar maple, yellow birch, beech, elm, aspen, basswood, white pine, hemlock, black spruce, tamarack, cedar, fir, white birch, alder, red pine, and jack pine. Sugar maple may have been of major economic importance to the aboriginal occupants of the area, and both deciduous and coniferous trees were utilized during historic times. This commercial logging activity, which was most intense between the 1880s and the 1920s, drastically altered the original composition of the area's forests, and they are still recovering from this cutting and the fires that followed (USDA 1977:79).

Moose, black bear, whitetail deer, and beaver are thought to be the major mammal species utilized during the prehistoric period. Because of the many lakes and rivers in the area, fish such as lake trout, lake herring,

and whitefish were also a major potential prehistoric food source. It is generally thought that the dispersed nature of terrestrial resources and the seasonal concentrations of aquatic resources resulted in seasonal dispersals and concentrations of prehistoric human populations in the Canadian Biotic Province during some periods (Fitting 1969; Fitting and Cleland 1969).

The climate of the eastern Upper Peninsula, a factor limiting modern agricultural use of the area (USDA 1977), probably also severely limited aboriginal agriculture (Cleland 1966:71, Yarnell 1964). Climatic variation within the area is a result of the modifying influence of the surrounding Great Lakes. Average annual snowfall exceeds 130 inches near Lake Superior, but averages only about 55 inches near Lake Michigan. The growing season ranges from 140 days near the Great Lakes shores to 80 days in interior areas (USDA 1977:134).

CULTURAL BACKGROUND

Although the prehistory of the eastern Upper Peninsula is relatively poorly known, the general outlines of the cultural sequence in the area can be determined from the limited work that has been done and through the use of data from surrounding areas. No sites dating to the Paleo-Indian, Early, or Middle Archaic Periods have been identified

in the area. However, data from nearby areas in Ontario indicate that such sites may exist in areas where crustal rebound has prevented post-glacial lakes from inundating them (Conway 1976, Fitting 1970:60-62). Several possible Late Archaic sites have been identified on typological grounds (Fitting 1968:132; 1974:133), but none has been radiocarbon dated. These sites are thought to have been summer fishing camps, but little is actually known about Late Archaic settlement patterns in the area.

By the first century A.D., ceramics are present in the area. Distinctive ceramic styles and an economic adaptation characterized by large lakeside villages indicate that the area was utilized by groups referred to as Lake Forest Middle Woodland. Large villages on the shores of the Great Lakes also occur during the following Late Woodland period, which is characterized by stylistic changes and a general increase in the intensity of the exploitation of lacustrine resources (Lovis and Holman 1976).

Little is known about the aboriginal use of the interior of the eastern Upper Peninsula during any of these periods. However, most of the project specific areas included in this study are located in inland areas. Evidence from surrounding areas, environmental, and ethnohistoric data, indicates that during the Woodland and contact periods,

small groups may have utilized interior areas during the winter months, although warm season hunting camps may also be present.

Although European traders and missionaries entered the area during the seventeenth century, extensive Euroamerican settlement did not occur until the second half of the nineteenth century. This settlement of the area centered around the logging industry. Early logging focused on coniferous species used for saw logs and on deciduous species which provided charcoal for the iron smelting industry.

Because transportation was a critical factor affecting the development of the logging industry, the interior of the Upper Peninsula was one of the last areas in the Great Lakes to be exploited. Early logging depended upon river transport, and the main logging rivers in the eastern Upper Peninsula were the Ford, Escanaba, Sturgeon, Manistique, and Tahquamenon (Maybee 1973:32). Major changes in the industry occurred in the late nineteenth and early twentieth centuries. After the pines were depleted, hemlock and hardwoods dominated the industry. During this period, the railroad became a significant means of transport (Rector 1953:288-89). An increase in the scale of logging operations is correlated with these changes. During the '20s and '30s, truck transport became important and pulp, ties, posts, poles, and pilings were more important than sawlogs. Smaller scale

operations again became prevalent as they had been during the early river and animal transport period (Rector 1953: 296).

In some areas, where soils and climate permitted, agriculture was practiced, but it was never as important as the forest products industry. Delta County probably contains the most productive cropland in the area, but only after the turn of the century did agriculture there become more than a supporting activity for the logging and mining industries (Sawyer 1911:380).

CHAPTER 3

METHODOLOGY

The survey methodology utilized in this study included a records and interview check to identify previously recorded or reported cultural resources within the areas of undertaking. Sources consulted include the National Register of Historic Places and the State Historic Preservation Officer (Appendix 1). No known National Register sites are located within the project area. An important source of information was the inventory of known sites in the Hiawatha National Forest compiled by Susan Martin (1977). In addition, a series of meetings was conducted with Forest Service personnel at the district level prior to initiating fieldwork. These meetings were conducted to review the various undertakings, the project objectives, cultural resource inventory information, pertinent natural resource data, and to coordinate our plans with the District Rangers.

The actual field methodology used during the survey was determined by several factors. Because of the amount of vegetation and ground cover present in the area, shovel testing was utilized in accordance with the recommendations of the first, second, and third Conferences on Surveying Woodland Environments. Whenever possible, shovel tests approximately 30 cm by 30 cm were excavated at a maximum of 25 meter intervals along parallel transect corridors

spaced approximately 25 meters apart. However, this sampling interval varied according to known or expected cultural resource sensitivity and physiographic conditions or obstacles. Areas where surface visibility was enhanced by erosion or construction were also checked whenever present.

This level of survey intensity was maintained throughout those items specified for complete coverage. For those items requiring partial coverage, the same level of intensity was maintained throughout an area amounting to no less than the percentage required. In order to identify sensitive zones within partial coverage areas where more intensive field coverage should be considered, an attempt was made to environmentally stratify survey coverage in these areas. Since most items were internally homogeneous according to broad environmental zones (United States Department of Agriculture, Forest Service, n.d.), local topography was used for stratification. For example, if a given item contained swamps, slopes, uplands, and stream terraces, all four zones would be included in the percentage sampled. However, areas swampy enough to make travel difficult were usually penetrated by only a single transect or surveyed along their edges.

Cultural resources located were recorded on USFS site forms and standard field records were kept, including field notes, field maps, and photographs. Sites located and

possible sensitive areas identified during partial coverage surveys were recorded on Forest Service 2 inches = 1 mile township maps. Once a site was located, only limited shovel testing took place so as not to disturb any subsurface features. Most sites were defined on the basis of surface indications. On prehistoric sites all visible tools and a sample of debitage were collected. At some sites this amounted to all material visible on the surface. When present, firecracked rock was noted but not collected. On Euroamerican sites, only limited samples of ceramics, and occasionally glass, were collected. Whenever possible, historic materials were analyzed in the field. Caution should be used in using the results of these surface artifact observations and collections since they may not be representative of the total range of variability present at any given site.

Analytical procedures were conducted to evaluate the potential significance of each site. Chipped stone tools and debitage were weighed, measured, and classified in an effort to make preliminary statements about the function and temporal placement of the prehistoric sites. The material and locational characteristics of these sites were compared to those of sites both within and adjacent to the study areas, and to those reported in the ethnohistoric

literature. Similarly, the content and location of Euro-american sites, as well as any available historical documentation, were used to assess their significance.

CHAPTER 4

FINDINGS

This section presents the results of our investigation of each area of undertaking, or item. Included is a description, discussion, and preliminary evaluation of each inventoried cultural resource, as well as a discussion of possibly sensitive areas identified in the partial coverage survey. This section is keyed to Forest Service Cultural Resource Inventory Forms and 2 inches = 1 mile township maps showing site locations, sensitive areas, field coverage, and survey intensity. These forms and maps are included in the set of exhibits to be delivered to the Contracting Officer's Representative along with this report.

ITEM AND SITE DESCRIPTIONS

Rapid River Ranger District

Item 1A, Wildlife Opening Construction. T42N, R19W, Section 17, 19, 20, 29, 30, and T42N, R20W, Section 13, 24, Delta County. 1610 Acres, 30 Percent Partial Coverage = 483 Acres (Exhibit A-1)

Within this item, river and stream banks and level to moderately sloping uplands were sampled. The major forest types present include red pine plantation, northern hardwoods, and a mixture of lowland conifers and hardwoods, all on generally sandy to loamy soils. Site 1A-1, the remains of five historic log bridges, was located in Section 17 and 20, T42N, R19W, at points where an abandoned railroad grade

crosses Johnson Creek (Exhibit B, Form 1A-1). These bridges span an average of 2-3 meters, and appear to have been constructed by driving vertical log pilings into the stream bed or bank in order to support horizontal log cross members. In most cases, horizontal components have decomposed or been washed away, leaving only the vertical components. Some isolated twentieth century refuse was associated with this railroad grade, but no material was collected.

Another site, designated 1A-2, was located in a cleared field in the NW 1/4 of the NE 1/4, Section 20, T42N, R19W (Exhibit B, Form 1A-2). This Euroamerican site consisted of the remains of at least five structures, as indicated by earthen embankments and depressions, and a large amount of refuse. The total extent of this site was 4800 square meters. Only a sample of potentially diagnostic ceramics was collected from this site.

Item 1B, Borrow Area. T42N, R19W, Section 33, Delta County. 110 Acres, Complete Coverage (Exhibit A-1).

A portion of this item has been disturbed by previous earth borrowing. The area is dominated by a moderately dissected knoll which forms a terrace overlooking the Sturgeon River which flows along the north edge of the item. Sandy loam soils support a northern hardwood forest in this area. No cultural resources were identified.

Item 1C, Planting. T40N, R21W, Section 8, Delta County, 40 Acres, Complete Coverage (Exhibit A-1).

This item is relatively level and is covered by a jack pine plantation on sandy soil. An aboriginal village site, 20DE6, is listed in the University of Michigan Museum of Anthropology site files as being located nearby in Section 5, T40N, R21W. Martin (1977:207) believes it is likely that this site is located somewhere in Section 8, because of the prose locational description given in these files, which indicates the site is northeast of Schaawe Lake. However, no cultural resources were encountered in this item.

Item 1D, Planting. T40N, R22W, Section 13, 24, 25, Delta County, 340 Acres, Complete Coverage (Exhibit A-1)

This item is a relatively level sandy plain formerly covered by jack and red pine, but large portions of the area have been recently clear cut. Part of the item is only one eighth to one fourth mile from Little Bay de Noc, but no actual lake frontage is present. No cultural resources were identified.

Item 1E, Borrow Area. T43N, R21W, Section 24, Delta County. 40 Acres, Complete Coverage (Exhibit A-1)

This item contains an existing borrow pit and has level topography, sandy gravel soils, and is covered by a

predominantly aspen forest. It is approximately one half mile east of the Whitefish River, and is in the general vicinity of the Bay de Noc-Grand Island aboriginal land and water route (Martin 1977:225). However, no cultural resources were identified in the area.

Item 1F, Site Preparation. T42N, R20W, Section 23, Delta County. 240 Acres, 30 Percent Partial Coverage = 72 Acres (Exhibit A-1)

Included in the sample from this item are level and slightly sloping uplands. Soils were generally sandy and covered by a mixture of conifers and hardwoods. No cultural resources were located in this item.

Item 1G, Road Construction. T41N, R21W, Section 14, Delta County. 120 Acres, 30 Percent Partial Coverage = 36 Acres (Exhibit A-1)

Both the slopes along Bills Creek and adjacent level uplands were included in the sample from this item. Most of the item consists of jack pine planted in sandy soils. No cultural resources were located.

Item 1H, Road Construction. T39N, R22W, Section 13, Delta County. 110 Acres, 30 Percent Partial Coverage = 33 Acres (Exhibit A-1)

This item is a uniformly low area with mixed swamp hardwoods and conifers on wet soils. No cultural resources were located in this item.

Item 1I, Road Construction. T41N, R21W, Section 12, 13, 14, Delta County. 200 Acres, 30 Percent Partial Coverage = 60 Acres (Exhibit A-1)

An upland ridge, upland flats, and stream banks were sampled in this item. Soils are sandy in this area which contains both northern hardwoods and red pine plantation. No cultural resources were located in this item.

Item 1J. Road Construction. T39N, R22W, Section 12 and T39N, R21W, Delta County. 210 Acres, 30 Percent Partial Coverage = 63 Acres (Exhibit A-1)

A poorly drained level upland and a small ridge were surveyed in this area which contained mixed conifers and hardwoods, as well as a small cleared area, all on sandy loam soils. Site 1J-1, a historic period site, was located in the SE-1/4 of the SE-1/4, Section 12, T39N, R22W (Exhibit B, Form 1J-1). This site consists of earthen embankments and depressions indicating the presence of at least five structures, as well as refuse which includes glass, ceramics, bone, and metal. The site covers about 1250 square meters. A sample of potentially diagnostic glass and ceramics was collected from the surface of this site.

Item 1K, Site Preparation. T39N, R22W, Section 1, Delta County. 80 Acres, 30 Percent Partial Coverage = 24 Acres (Exhibit A-1)

Level uplands, some of which are poorly drained, were sampled in this item. Swamp conifers dominated the

wetter areas while red pine has been planted in the better drained areas, and soils are generally sandy. No cultural resources were located in this item.

Item 1L, Borrow Area. T39N, R21W, Section 11, Delta County. 40 Acres, Complete Coverage (Exhibit A-1)

There is an existing, recently used limestone or dolomite quarry in this item, with bedrock occurring at or near the surface. A series of parallel low stony ridges trending east-west through this item appear to be fossil beach ridges associated with post-glacial lake levels. Based on geological studies of the nearby Garden Peninsula, it seems likely that these ridges, which are 640-700 feet ASL, are representatives of Wyebridge and Upper Group beaches and probably date between 9000 and 8000 BC (Prah1 and Farrand 1968: 15-16). No cultural resources were located on these ridges or in any other portion of this item.

Item 1M Road Construction. T41N, R20W, Section 27, 28, Delta County. 200 Acres, 30 Percent Partial Coverage = 60 Acres (Exhibit A-1)

A sandy ridge and adjacent poorly drained level areas were included in the sample from this item. Wet areas were dominated by tamarack, while drier areas had northern hardwoods. No cultural resources were located.

Item 1N, Planting. T40N, R21W, Section 5, Delta County.
120 Acres, 30 Percent Partial Coverage = 36 Acres
(Exhibit A-1)

Level sandy uplands and stream banks were included in the sample from this item, which is covered by a jack pine plantation. No cultural resources were located.

Item 1O, Site Preparation. T42, R20W, Section 1, Delta County.
60 Acres, 30 Percent Partial Coverage = 18 Acres (Exhibit A-1)

Gently sloping uplands and stream banks were sampled in this item, which is dominated by a red pine plantation with sandy soils. No cultural resources were located.

Item 1P, Wildlife Opening Construction. T42N, R19W, Section 3, 4, 9, 10 and T43N, R19W, Section 34, Delta County.
470 Acres, 10 Percent Partial Coverage = 47 Acres (Exhibit A-1)

Rolling sandy uplands along a terrace above Sturgeon River floodplain were sampled in this item. Northern hardwoods dominated the forest cover of this item and no cultural resources were located.

Item 1Q, Wildlife Opening Construction. T42N, R20W, Section 9, 16, Delta County. 260 Acres, 10 Percent Partial Coverage = 26 Acres (Exhibit A-1)

The shore of MacDonald Lake and adjacent level uplands were surveyed in this item, which had sandy loam

soils and northern hardwood forest. Site 1Q-1 was located in a small clearing near MacDonald Lake in the NE-1/4 of the NW-1/4, Section 16, T42N, R20W (Exhibit B, Form 1Q-1). This Euroamerican site consisted of an earthen embankment, a depression, and an associated refuse dump, all covering an area of approximately 600 square meters. A sample of potentially diagnostic glass and ceramics was collected from this site.

Item 1R, Wildlife Opening Construction. T43N, R19W, Section 11, 14, Delta County. 320 Acres, 10 Percent Partial Coverage = 32 Acres (Exhibit A-1)

A steep ridge dominated by northern hardwoods and a level area dominated by aspen were sampled in this item. Soils were generally sandy and contained some gravel. No cultural resources were observed.

MANISTIQUE RANGER DISTRICT

Item 2A, Road Construction. T41N, R19W, Section 9, Delta County. 40 Acres, Complete Coverage (Exhibit A-2)

This item contains gentle slopes covered with mixed hardwoods and conifers and a wet floodplain area dominated by swamp conifers. The unit is located only approximately one-quarter mile east of the Sturgeon River. Hinsdale (1931: Map 19) indicates that an aboriginal trail paralleled the lower portion of the Sturgeon, but no cultural resources were identified in this item.

Item 2B, Erosion Control. T42N, R18W, Section 9, Delta County. 40 Acres, 30 Percent Partial Coverage = 12 Acres (Exhibit A-2)

The portion of this item sampled included the shore of Van Winkle Lake and the adjacent upland area. During the field survey of this item, an isolated retouched chert flake (IF-2B-1) was collected from a two-track trail southwest of Van Winkle Lake (Exhibit A-2). Some possible firecracked rock was also observed, but shovel tests in the area failed to produce any additional cultural material.

Item 2C, Site Preparation. T43N, R17W, Section 22, 27, Schoolcraft County. 100 Acres, Complete Coverage (Exhibit A-2).

The northern portion of this item is dominated by swamp while the southern portion contains both swampy areas and a red pine plantation. Hinsdale (1931: Map 19) indicates the presence of an aboriginal trail along the Indian River, which flows along the southeast edge of the item, but no cultural resources were identified during our survey.

Item 2D, Site Preparation. T44N, R17W, Section 27, 28, Schoolcraft County. 80 Acres, Complete Coverage (Exhibit A-2)

The upper portion of the Indian River flows through the northwest corner of this item, the north side of which was paralleled by a possible railroad grade. Most of the item was a sandy upland dominated by northern hardwoods

and red pine plantings. No cultural resources were identified during the field survey of the area.

Item 2E, Erosion Control. T44N, R17W, Section 6, Delta County. 80 Acres, 30 Percent Partial Coverage = 36 Acres (Exhibit A-2)

The surveyed portion of this item includes segments of the shore of East Lake and the sandy uplands slightly inland. A prehistoric aboriginal site designated 2E-1 (Exhibit B, Form 2E-1) was located in an area used for camping and boat launching on the west shore of East Lake. This site, which consisted of unmodified chipped stone debitage, and possibly associated firecracked rock, bone, and mussel shell, covers about 20 square meters atop a slight sand knoll about five meters west of the lake. All visible materials were collected from this site.

Item 2F, Site Preparation. T41N, R18W, Section 6, Delta County. 80 Acres, 30 Percent Partial Coverage = 24 Acres (Exhibit A-2)

The portion of this item surveyed included a small swampy area along the outlet of West Branch Lake, a larger upland area dominated by a red pine plantation and northern hardwoods, and part of the shore of West Branch Lake. No cultural resources were identified in this item.

Item 2G, Site Preparation. T43N, R18W, Section 32, Delta County. 80 Acres, 30 Percent Partial Coverage = 24 Acres (Exhibit A-2)

Most of the sampled portion of this item consists of an upland area of sandy soils and northern hardwoods. The item is near Little Stevens Lake, but contains no actual shoreline. No cultural resources were identified in this item.

Item 2H, Site Preparation. T42N, R17W, Section 18, Schoolcraft County. 160 Acres, 30 Percent Partial Coverage = 48 Acres (Exhibit A-2)

The west portion of this item was a large swamp, and only a small portion along a road going through it and near its edges was surveyed. The rest of the sampled area consisted of well drained uplands dominated by northern hardwoods. No cultural resources were identified.

Item 2I, Site Preparation. T43N, R18W, Section 33, 34, Delta County. 240 Acres, 30 Percent Partial Coverage = 72 Acres (Exhibit A-2)

The sampled portion of this item consisted of a level sandy plain dominated by nine jack pine plantations. This area has been extensively bulldozed and cleared. A small swampy area near Eva Lake was not surveyed because of its wetness. No cultural resources were identified in this item.

Item 2J, Site Preparation. T43N, R18W, Section 23, 24, 25, 26, Delta County. 400 Acres, 30 Percent Partial Coverage = 120 Acres (Exhibit A-2)

This item contains moderately sloping uplands and creek banks, both of which were included in the area surveyed. Both sides of Carr Creek, which flows through the southwest portion of the item, were included. A prehistoric lithic scatter was recorded approximately one eighth mile south of this item by a Michigan State University field crew during the summer of 1978 (Richards and Lovis, personal communication). This site, which is on the south side of Carr Creek, was relocated by a Commonwealth survey party, who determined that it did not extend into Item 2J, and no additional cultural resources were identified in the area.

Item 2K, Site Preparation. T43N, R17W, Section 16, 21, Schoolcraft County. 400 Acres, 30 Percent Partial Coverage = 120 Acres (Exhibit A-2)

This item contains inland lakeshore and gently sloping uplands, both of which were sampled. Vegetation was mainly northern hardwoods and red and jack pine plantings. No cultural resources were identified during field survey of this item.

Item 2L, Site Preparation. T43N, R17W, Section 16, 21, Schoolcraft County. 200 Acres, 30 Percent Partial Coverage = 60 Acres (Exhibit A-2)

Within this item, an inland lakeshore, a creek bank, and both level and moderately sloping uplands were

included in the sampled portion. Soils in the area were mainly sandy, with forest cover dominated by mixed conifer-hardwoods and pine plantings. No cultural resources were identified.

Item 2M, Site Preparation. T42N, R18W, Section 25, 26, Delta County. 120 Acres, 30 Percent Partial Coverage = 36 Acres (Exhibit A-2)

Most of this item is dominated by a swamp containing lowland conifers and hardwoods, with only limited higher ground present along the north edge of the area. An area containing both swamp and slightly higher ground in the west part of the item was sampled with no cultural resources identified.

Item 2N, Site Preparation. T42N, R18W, Section 31, Delta County. 160 Acres, 30 Percent Partial Coverage = 48 Acres (Exhibit A-2)

A corridor was surveyed cutting across the sandy ridge and the adjacent parallel poorly drained areas that dominate the topography of this item. An historic site was located along this sandy ridge in the SE-1/4 of the SW-1/4, Section 31, T42N, R18W, and was designated 2N-1 (Exhibit B, Form 2N-1). This site consisted of earthen embankments indicating the presence of at least three structures and a single structural depression, as well as a wide

range of historic refuse. The site covers approximately 16,100 square meters. It contains logging implements and is associated with an abandoned railroad grade. A sample of potentially diagnostic glass and ceramics was collected from portions of this site disturbed by vandalism.

Item 20, Site Preparation. T43N, R17W, Section 30, Schoolcraft County. 160 Acres, 30 Percent Partial Coverage = 48 Acres (Exhibit A-2)

In this unit, a corridor was surveyed which traversed the gentle ridges and valleys that are the major topographic features present. Both ridges and valleys are dominated by sandy soils and mixed aspen and pine forest. No cultural resources were identified.

Item 2P, Erosion Control. T42N, R18W, Section 9, Schoolcraft County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

The sampled portion of this item includes areas along the shores of N and S Muleshoe Lakes and moderate slopes located near these lakes. Sandy soils and mixed hardwoods and conifers dominate the area. No cultural resources were identified.

Item 2Q, Erosion Control. T42N, R18W, Section 6, Schoolcraft County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

An area containing frontage on Minerva and Lorraine Lakes and an upland ridge between the lakes was surveyed in

this item. This area had sandy soils and was covered by a maple-beech forest. No cultural resources were located.

Item 2R, Erosion Control. T43N, R17W, Section 18, Schoolcraft County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

Inland lake frontage and a gently sloping upland area were included in the sampled portion of this item. No cultural resources were observed in this area, which was dominated by sandy soils and northern hardwoods.

Item 2S, Erosion Control. T42N, R18W, Section 1, Delta County. T42N, R18W, Section 1, Delta County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

An area along Banana Lake and a steep ridge southwest of the lake were surveyed. Soils were sandy and forest cover was heavy and composed of both hardwoods and conifers. No cultural resources were located.

Item 2T, Erosion Control. T43N, R18W, Section 5, 8, Delta County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

The shore of Mowe Lake and adjacent gently sloping areas were surveyed in this item. Sandy soils and northern hardwoods dominated the area. No cultural resources were found.

Item 2U, Erosion Control. T43N, R18W, Section 14, Delta County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

The sampled area includes shoreline on Jack Pine Lake and adjacent gently sloping uplands. The major tree species were hardwood growing on sandy soils. No cultural resources were located.

Item 2V, Erosion Control. T42N, R18W, Section 1, Delta County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

Square Lake frontage and surrounding gentle slopes were sampled within this unit. Hardwoods and some cleared areas were present on the sandy soils in the area. No cultural resources were identified.

Item 2W, Erosion Control. T42N, R18W, Section 2, 3, Delta County. 120 Acres, 10 Percent Partial Coverage = 12 Acres (Exhibit A-2)

Included in the sampled area are both lakeshore and level uplands. Pines, scrub oak, and aspen are dominant in this area of sandy soils. Two isolated finds of pre-historic cultural material were located in this item (Exhibit A-2). IF-2W-1 consisted of one unmodified chert flake which was not collected. IF2W-2 consisted of a chert bipolar core or core tool which was collected. Both isolated finds were found along a two-track trail south of Lyman Lake. Shovel testing in the vicinity of these finds failed to produce additional cultural material.

A prehistoric aboriginal site was also identified in this item (Exhibit B, Form 2W-1). This site was located in NE-1/4 of NE-1/4, Section 3, T42, R18W, about ten meters south of Lyman Lake in a level sandy area exposed by erosion. It consisted of chipped stone tools and debitage, as well as firecracked rock, covering an area of approximately 600 square meters. All visible chipped stone material was collected from this site.

Item 2X, Erosion Control. T43N, R18W, Section 27, Delta County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

An area along the south shore of Spring Lake, as well as some of the adjacent inland area, was sampled in this item. Hardwoods dominate the forest cover in this area of sandy soils. No cultural resources were identified.

Item 2Y, Erosion Control. T42W, R18W, Section 7, 18, Delta County. 160 Acres, 10 Percent Partial Coverage = 16 Acres (Exhibit A-2)

Shoreline along Chicago Lake and adjacent level uplands were included in the sample from this item. Vegetation in the area consisted of mixed pine and hardwood forest on sandy soils. Two prehistoric open campsites, 2Y-1 and 2Y-2 (Exhibit B, Forms 24-1 and 24-2), were identified in this item. Site 2Y-1 is located in the NW-1/4 of NE-1/4, Section 18, T42N, R18W, about 5-10 meters west of Chicago Lake in a sandy area exposed by recreational

use and erosion. The site consists of chipped stone tools and debitage and firecracked rock scattered over an area of approximately 1625 meters. All visible cultural material was collected.

Site 2Y-2 is located in the SE-1/4 of SW-1/4, Section 7, T42N, R18W, approximately 8 meters north of Chicago Lake. Portions of the site have been exposed by recreational use and erosion. Firecracked rock, chipped stone tools, and debitage were scattered over an area of approximately 170 square meters. All identifiable tools and a grab sample of debitage types were collected. Some small retouch flakes were observed but not collected.

Item 2Z, Erosion Control. T42N, R17W, Section 6, Schoolcraft County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

The sample from this item included the shoreline along Banana Lake and some surrounding moderately sloping uplands. Both conifers and hardwoods were present in this area of sandy soils. No cultural resources were identified.

Item 2AA, Erosion Control. T43N, R18W, Section 34, Delta County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

The shore of Gooseneck Lake and portions of the adjacent level uplands were included in the sample from this item. This area was forested with a mixture of pines and

hardwoods and had sandy soils. Sites located in this item were 2AA-1, 2AA-2, 2AA-3, and 2AA-4, all prehistoric open campsites (Exhibit B, Forms 2AA-1, 2AA-2, 2AA-3, and 2AA-4).

Site 2AA-1 is located in the SW-1/4 of SW-1/4, Section 34, T43N, R18W, in a two-track trail approximately 15 meters north of Gooseneck Lake. It consists of a low density scatter of firecracked rock and chipped stone debitage covering approximately 210 square meters. All visible debitage was collected.

Site 2AA-2 is separated from Site 2AA-1 by a culturally sterile area, and is located in the SW-1/4 of SW-1/4, Section 34, T43N, R18W, in a two-track trail and adjacent eroded areas, approximately 10 meters north of Gooseneck Lake. It consisted of firecracked rock, chipped stone tools and debitage covering approximately 520 square meters. All visible tools and a sample of debitage were collected.

Site 2AA-3 is located approximately 150 meters southeast of Site 2AA-2 in the SE-1/4 of SW-1/4, Section 34, T43N, R18W, about 10 meters northeast of Gooseneck Lake. Covering an area of approximately 300 square meters on a slight knoll which has been eroded by recreational use, the

site is separated from the adjacent prehistoric campsites by poorly drained bogs. Cultural material at this site includes firecracked rock and chipped stone tools and debitage. All identifiable tools and a sample of debitage were collected.

Site 2AA-4 is located about 40 meters southeast of Site 2AA-3 in the SE-1/4 of SW-1/4, Section 34, T43N, R18W, in an open area eroded by recreational use. The site covers approximately 1050 square meters and consists of fire-cracked rock, and chipped stone tools and debitage. All identifiable tools and a debitage sample were collected.

Item 2BB, Erosion Control. T43N, R18W, Section 34, 35, Delta County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

The sampled area in this item includes shoreline along Lyman Lake and level uplands. The sandy soils within this item are covered by a mixed pine and oak forest. The only cultural material identified in this item consists of a single isolated chert flake, designated IF-2BB-1, which was observed in a two-track trail along the north shore of Lyman Lake (Exhibit A-2).

Item 2CC, Erosion Control. T43N, R18W, Section 36, Delta County. 200 Acres, 10 Percent Partial Coverage = 20 Acres (Exhibit A-2)

Shoreline along Carr and Bear Lakes and moderately sloping uplands were included in the sample from this item. Sandy soils and hardwoods were observed throughout the area. Cultural resources identified consist of a prehistoric open campsite designated Site 2CC-1 (Exhibit B, Form 2CC-1). This site was located in the SW-1/4 of NW-1/4, Section 36, T43N, R18W, in an eroded area along a slight terrace approximately 10 meters south of Carr Lake. The site consisted of fire-cracked rock and chipped stone tools and debitage covering about 5 square meters. All visible chipped stone material was collected.

Item 2DD, Erosion Control. T44N, R17W, Section 16, 21, 22, Schoolcraft County. 120 Acres, 10 Percent Partial Coverage = 12 Acres (Exhibit A-2)

Included in the sampled area of this item were shoreline along Steuben Lake and some adjacent level upland areas. Site 2DD-1, a prehistoric open campsite, was located in the SE-1/4 of SE-1/4 of Section 16, and the NE-1/4 of NE-1/4 of Section 21, T44N, R17W, in an eroded area along the west shore of Steuben Lake. The site covered approximately 9000 square meters and consisted of firecracked rock, chipped stone tools and debitage, and possible associated bone. All visible tools and a debitage sample were collected.

Item 2EE, Erosion Control. T44N, R17W, Section 19, Schoolcraft County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

Within this item, the shoreline of Bluegill Lake and some adjacent sloping uplands were sampled. No cultural resources were identified in this area, which is dominated by sandy soils and a mature beech-maple forest.

Item 2FF, Erosion Control. T44N, R17W, Section 9, Schoolcraft County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

The shore of Crooked Lake and the adjacent level uplands were sampled in this item, which was dominated by a hardwood forest. Site 2FF-1, a prehistoric open campsite, was located in the NW-1/4 of the NE-1/4, Section 9, T44N, R17W, in a level eroded area approximately 30 meters west of Crooked Lake (Exhibit B, Form 2FF-1). This site consisted of firecracked rock, chipped stone tools and debitage, and possible associated bone and mussel shell, scattered over approximately 15 square meters. All visible chipped stone material was collected.

Item 2GG, Erosion Control. T44N, R18W. Section 32, Schoolcraft County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

A sample of shoreline along Tom's Lake and adjacent gentle slopes were surveyed in this item. The area was covered by a mixed pine and hardwood forest and contains Site 2GG-1, a prehistoric open campsite (Exhibit B, Form 2GG-1).

This site was located in the SW-1/4 of the SW-1/4 of Section 32, T44N, R18W, in a level area which has been eroded by recreational use about 4 meters southeast of Tom's Lake. Covering an area of approximately 200 square meters, the site contained firecracked rock, chipped stone tools and debitage, and possibly associated bone and mussel shell. All visible chipped stone was collected.

Item 2HH, Erosion Control. T44N, R18W, Section 32, 33, Schoolcraft County. 120 Acres, 10 Percent Partial Coverage = 12 Acres (Exhibit A-2)

Portions of Swan Lake shoreline and level to gently sloping upland areas were included in the sample from this item. Vegetation in the area consists of a mixed pine and hardwood forest on sandy soils. A pre-historic open campsite, designated Site 2HH-1, was located in the NW-1/4 of the SW-1/4, Section 33, T44N, R18W (Exhibit B, Form 2HH-1). This site is situated atop a slight knoll approximately 10 meters south of Swan Lake, in an area eroded by recreational use. This site, which includes chipped stone tools and debitage, firecracked rock, and possible associated mussel shell, covers an area of approximately 5 square meters. All visible chipped stone material was collected.

Item 2II, Erosion Control. T44N, R18W, Section 34, Schoolcraft County. 40 Acres, 10 Percent Partial Coverage = 4 Acres (Exhibit A-2)

The sampled area in this item includes portions of the shores of Nineteen and Ironjaw Lakes and adjacent inland areas. Forests in the area are dominated by northern hardwoods with some pine present, and soils are sandy. One shovel test in this area yielded possible firecracked rock but no definite prehistoric or historic cultural material was observed.

Item 2JJ, Erosion Control. T44N, R18W, Section 25, 36, Schoolcraft County. 80 Acres, 10 Percent Partial Coverage = 8 Acres (Exhibit A-2)

Portions of the shore of Triangle Lake and adjacent upland slopes were surveyed in this item. Soils within this area were sandy and covered by a mixed hardwood and conifer forest. Site 2JJ-1, an historic logging camp, was located in the SW-1/4 of the SW-1/4, Section 25, T44N, R18W, in a level clearing about 15 meters north of Triangle Lake (Exhibit B, Form 2JJ-1). This site covered approximately 3600 square meters and contained earthen embankments indicating the presence of at least five structures, a series of depressions, and a large amount of glass, metal, faunal, and ceramic refuse. Only a sample of potentially datable glass and ceramics was collected.

MUNISING RANGER DISTRICT

Item 3A, Gravel Pit Operation. T46N, R20W, Section 7, Alger County. 40 Acres, Complete Coverage (Exhibit A-3)

The topography of this item is gently rolling and the soils are sandy gravels supporting a northern hardwoods forest. Part of the area has been used as a gravel or borrow pit and a number of two-track trails are present. No cultural resources were identified in this item.

Item 3B, Road Construction. T47N, R21W, Section 22, Alger County. 150 Acres, Complete Coverage (Exhibit A-3)

This item contains extensive wet swampy areas and a series of slight ridges and knolls. Low areas contain mixed swamp conifers and hardwoods while higher areas contain pines and northern hardwoods. No cultural resources were located in this item.

Item 3C, Various. T44N, R18W, Section 4, Schoolcraft County. 80 Acres, 30 Percent Partial Coverage = 24 Acres (Exhibit A-3)

Gently rolling uplands and adjacent level, wetter areas were sampled in this item. Soils were sandy and covered by a mixture of hardwoods and conifers. No cultural resources were identified in this item.

Item 3D, Road Construction. T44N, R18W, Section 14, Schoolcraft County. 200 Acres, 30 Percent Partial Coverage = 60 Acres, (Exhibit A-3)

The portion of this item sampled had uniformly level to very slightly rolling topography. Soils were mostly sandy with a variety of vegetation types present, including northern hardwoods, pines, swamp conifers, pine plantings and some open clearings. No cultural resources were located in this item.

Item 3E, Road Construction. T44N, R18W, Section 23, Schoolcraft County. 120 Acres, 30 Percent Partial Coverage = 36 Acres (Exhibit A-3)

The sample from this item includes shoreline of Little Island Lake and adjacent level to gently sloping uplands. Soils were sandy and/or highly organic and the major tree species were coniferous. No cultural resources were located in this item.

Item 3F, Various. T44N, R19W, Section 1, 12 Alger County, 600 Acres, 30 Percent Partial Coverage = 180 Acres (Exhibit A-3)

Level and rolling uplands, as well as lakeshores, were included in the sample from this item. Soils were sandy and contained gravel in some areas. Vegetational types include paper birch-aspen, northern hardwoods, open fields, swamp conifers and pine plantings. Within this item, Site 3F-1, an historic logging camp, was located in the SE and SW-1/4s of the SE-1/4 of Section 1, T44N, R19W (Exhibit B,

Form 3F-1). This site is adjacent to an abandoned railroad grade within a slight hollow, and covers approximately 11,700 square meters. Embankments and depressions indicate that at least eight structures were present. Refuse observed at this site includes metal, glass, and ceramic debris. No artifacts were collected from this site.

Item 3G, Road Construction. T45N, R17W, Section 21, Schoolcraft County. 40 Acres, 30 Percent Partial Coverage = 12 Acres (Exhibit A-3)

Included in the sampled area within this item are lakeshore, swampy areas, slopes, and level uplands. Swamp conifers dominate low ground, while a mixture of northern hardwood and pines are present on higher ground. No cultural resources were located in this item.

Item 3H, Gravel Pit Operation. T45N, R18W, Section 30, Schoolcraft County. 40 Acres, Complete Coverage (Exhibit A-3)

The topography of this area is rolling, with alternating knolls and slight depressions. Soils are gravelly sands. No cultural resources were found within this item.

Item 3I, Road Construction. T45N, R18W, Section 2, 3, Schoolcraft County. 200 Acres, 30 Percent Partial Coverage = 60 Acres (Exhibit A-3)

Level uplands, rolling uplands, and stream banks were included in the sample from this item. Swamp

conifers and northern hardwoods dominated the vegetation in this area of sandy soils. No cultural resources were located in this item.

Item 3J, Various. T45N, R20W, Section 27, 34, Alger County. 440 Acres, 30 Percent Partial Coverage = 132 Acres (Exhibit A-3)

Level uplands were included in the sample from this item. Soils within the area were sandy and swamp conifers and pines dominated the vegetation. No cultural resources were located.

Item 3K, Road Construction. T46N, R18W, Section 35, 36, Alger County. 320 Acres, 30 Percent Partial Coverage = 96 Acres (Exhibit A-3)

Slightly rolling to level uplands were sampled in this item. Hardwoods dominated the vegetation and soils were sandy. No cultural resources were located.

SAULT STE. MARIE RANGER DISTRICT

Item 4A, Borrow Area. T45N, R3W, Section 19, 30, Chippewa County. 80 Acres, Complete Coverage (Exhibit A-4)

The Pine River and a tributary stream flow through this item, which is primarily a level area with sandy soils and mixed hardwood forest. No cultural resources were located in the area.

Item 4B, Timber Sale. T46N, R5W, Section 29, Chippewa County. 120 Acres, 30 Percent Partial Coverage = 36 Acres (Exhibit A-4)

A linear sampling transect crossed this generally homogenous item. The area was dominated by swamp conifers and had generally sandy soils, except for some of the wetter areas. No cultural resources were located.

Item 4C, Timber Sale. T47N, R3W, Section 25, Chippewa County. 200 Acres, 30 Percent Partial Coverage = 60 Acres (Exhibit A-4)

A nearly level, poorly drained upland, and the edge of an ancient wave cut terrace were sampled in this item. The base of this terrace is approximately 650-660 feet in elevation, which indicates that it was created during the Nipissing Stage of the Great Lakes about 4500 years ago. Although prehistoric sites have been found on Nipissing Stage beaches in other areas, no sites were located along this feature in Item 4C. In addition, no evidence was found of nineteenth century material relating to the 1858 Chippewa Reserve (20CH52), which is generally located in Ranges 2 and 3 west of T47N (Martin 1977: 164; Michigan History Division Site Files), or of any other cultural resources.

Item 4D, Borrow Area. T47N, R3W, Section 19, 20, Chippewa County. 80 Acres, Complete Coverage (Exhibit A-4)

Topography is rolling in this item, located approximately one half mile inland from Lake Superior, which contains sandy gravel soils and northern hardwood forest. No evidence was located of historic aboriginal use associated with the 1858 Chippewa Reserve generally located in Ranges 2 and 3, west of T47N (Martin 1977: 164; Michigan History Division Site Files), or any other cultural resources.

Item 4E, Timber Sale. T47N, R6W, Section 3, 4, 9, 10 Chippewa County. 1120 Acres, 30 Percent Partial Coverage = 336 Acres.

The results of the investigations in this item are included in a separate report submitted to the Contracting Officer's Representative.

Item 4F, Timber Sale. T44N, R4W, Section 26, 27 Chippewa County. 400 Acres, 20 Percent Partial Coverage = 80 Acres (Exhibit A-4)

Relatively level upland and frontage along Bear Creek were included in the sample from this item. Soils are sandy and contain light gravel and the area is largely a red pine plantation, portions of which have been recently cut. Natural fragments of Cordell formation chert were observed but no cultural resources were identified.

Item 4G, Timber Sale. T45N, R4W, Section 4, 5, 8, Chippewa County. 400 Acres, 20 Percent Partial Coverage = 80 Acres (Exhibit A-4)

The bank of Sullivan Creek and nearby gently sloping uplands were sampled in this item. Soils were sandy and contained gravel with planted red pine and jack pine dominating the forest cover. Possible firecracked rock was observed along Sullivan Creek, but no definite cultural resources were located.

Item 4H, Road Construction. T45N, R5W, Section 6, Chippewa County. 120 Acres, 30 Percent Partial Coverage = 36 Acres (Exhibit A-4)

The shore of Whitmarsh Lake and gently rolling uplands were sampled in this item. Planted red pine was the dominant vegetation and soils were sandy. A concentration of firecracked rock was observed along the north shore of Whitmarsh Lake, but no definite cultural resources were located.

Item 4I, Borrow Area. T45N, R6W, Section 19, Chippewa County. 40 Acres, Complete Coverage (Exhibit A-4)

Much of this nearly level item had wet soils dominated by swamp conifers, with a slight, sandy, pine covered ridge running through the north portion. No cultural resources were located.

Item 4J, Timber Sale. T46N, R4W, Section 34, Chippewa County, 160 Acres, 20 Percent Partial Coverage = 32 Acres (Exhibit A-4)

A gently sloping upland with sandy soils and a mixed pine and hardwood forest was sampled in this item. No cultural resources were identified.

Item 4K, Borrow Area. T47N, R5W, Section 21, Chippewa County. 40 Acres, Complete Coverage (Exhibit A-4)

The topography of this item is slightly rolling, with sandy soils and northern hardwoods forest. Although an historic period Chippewa cemetery (20CH10) associated with the 1855 reservation is supposedly located in Section 21 or 22, T47N, R5W, (Martin 1977: 161), no cultural resources were located in this item.

ST. IGNACE RANGER DISTRICT

Item 5A, Control Burn. T42N, R5W, Section 4, 5, 8, 9 Mackinac County. 360 Acres, 30 Percent Partial Average = 108 Acres (Exhibit A-5).

A level sandy upland covered by a red pine plantation was sampled in this item. An historic logging camp listed in the St. Ignace Ranger District Historical Atlas (Martin 1977: 188) was located in this item and designated 5A-1 (Exhibit B, Form 5A-1). It is listed as a roundhouse-railroad complex, although no evidence of a roundhouse was observed. The site is adjacent to an old railroad grade and consists of earthen embankments remaining from two structures, and four associated depressions, coal, cinders, and

a limited amount of refuse. The site covered approximately 5000 square meters in the NW-1/4 of NE-1/4, Section 8, T42N, R5W. No collections were made from this site.

Item 5B, Gravel Pit. T43N, R4W, Section 22, Mackinac County. 160 Acres, Complete Coverage (Exhibit A-5)

This item is approximately one fourth to one half mile south of East Lake, and slopes gently lakeward. Soils are gravelly, sandy loams, with large boulders and bedrock outcrops occasionally present. Northern hardwoods dominate the forest cover. Site 5B-1 was located in the NE-1/4 of the NW-1/4 of Section 22, T43N, R4W (Exhibit B, Form 5B-1). This historic site is listed in the St. Ignace Ranger District Historical Atlas as a Sugar Camp, but no evidence supporting this designation was observed. Located adjacent to an old railroad grade currently followed by gravel road, the site consists of earthen embankments outlining at least five structures, five associated structural depressions, and a wide range of refuse. Only a sample of potentially diagnostic ceramics was collected from this site.

Item 5C, Road Construction. T43N, R5W, Section 9, Mackinac County. 70 Acres, 30 Percent Partial Coverage = 21 Acres (Exhibit A-5)

Level to slightly sloping uplands were sampled in this item. The area has sandy soils and is dominated by a red pine plantation. Site 5C-1, which was reported by Mr. Jim Evers of the USFS St. Ignace Ranger District, was located in the

NE-1/4 of SE-1/4 of Section 9, T43N, R5W (Exhibit B, Form 5C-1). This historic site covered approximately 2000 square meters and consisted of three earthen outlines of structures, a single structural depression, and a limited amount of glass and metal refuse. No artifacts were collected from this site.

CULTURAL MATERIAL

Euroamerican Ceramics

Ceramics are extremely useful in the analysis of historic sites. They are thought to often reflect socioeconomic differences and can also be a very reliable dating mechanism. Ceramics collected during this survey were classified according to bisquit or paste coloration, the relative appearance and hardness of the bisquit body (i.e., soft, semivitreous, and vitreous), and the decorative techniques and glazes employed (Table 1). In general, the ceramics collected are typical of those most popular during the twentieth century and, in some cases, the late nineteenth century.

Site 1A-2 contained thick vitreous paste sherds marked "USQMC, CCC-14, 1936" and "QMC." These suggest that the site may have been a Civilian Conservation Corp. camp during the 1930s or 1940s. An alternative explanation was offered by a local informant, who stated that the site had been used as a prisoner of war camp during World War II.

TABLE 1

EARTHENWARE DISTRIBUTION

	<u>2JJ-1</u>	<u>1Q-1</u>	<u>1A-2</u>	<u>2N-1</u>	<u>1J-1</u>	<u>5B-1</u>
<u>White Bisquit</u>						
Soft Paste						
White Glaze		2			1	3
Decalcomania		4	1	3	5	14
Cream Glaze		1	1	1		3
Polychromo Transfer		1			2	3
Yellow Glaze			1			1
Gold Overglaze				2		3
Blue Flow					1	1
Green Transfer					4	4
Blue Band Overglaze						1
Semivitreous Paste						
Grey Transfer	2					2
Brown Transfer		3			1	4
Pearl Glaze				2		2
Pearl-White Glaze						1
Vitreous Paste						
Decalcomania		1	1	4	2	8
Pearl Glaze			2			2
Pearl-White			2			3
Gold Overglaze				1		1
<u>Colored Bisquit</u>						
Soft Paste						
Red Ware					1	1
Semivitreous Paste						
Yellow Paste	2	1				4
Grey Slip				1	1	2
Salt Glaze		1				1
Brown and Yellow Slip				2		2
Brown Lustrous				1		1
TOTALS	4	14	8	14	21	6

Ceramics from Site 1U-1 appear to be characteristic of the early twentieth century or late nineteenth century. A soft paste whiteware sherd marked "Albion Works, England," indicates it was manufactured by J. Dimmock and Co. of Hanley between 1878 and 1904 (Godden 1964: 208).

At Site 1Q-1, ceramics typical of the early twentieth century were collected. A soft paste white glaze sherd marked "Greenwood China, Trenton, New Jersey " can be attributed to the Greenwood Pottery which was established in 1861 (Thorn 1947: 129). A spread eagle motif above the initials "CT" on a porcelain sherd is the mark of Tielsch and Co., of Silesia, a small independent German Manufacturer who started production in the mid-nineteenth century (Cushion and Honey 1956: 141). Large amounts of German porcelain were imported into the United States during the early twentieth century, but this flow was disrupted by World War I, and following the war, Japanese sources became important (Demeter and Lowery 1977: 75; Commonwealth Associates Inc., 1978: 133).

The ceramic assemblage from Site 2N-1 also appears typical of the early twentieth century. Besides the ceramics listed in Table 1, a kaolin pipe stem fragment and fragments of two different porcelain doll heads were collected. These doll heads suggest the presence of family

groups at this site. The limited sample from Site 2, JJ-1, also suggests a twentieth century occupation.

At Site 5B-1, a wide range of ceramics, suggesting an early to mid-twentieth century occupation, were collected. Included in this sample is a semivitreous paste sherd with the marking "Warranted, D. E. Mc N. P. Company, Liverpool." According to Ramsay (1939:217), the D. E. McNichol Pottery Co. of Liverpool, Ohio, began production in 1892.

In general, there appear to be major differences in ceramic assemblages which may relate to social and economic differences among the sites. At Sites 2JJ-1, 5A-1, 5C-1, and 3F-1, ceramics are infrequent and of restricted varieties. This may be indicative of functionally specific logging camps occupied for short periods of time where perhaps enamel ware utensils were preferred. At sites 1Q-1, 1A-2, 2N-1, 1J-1, and 5B-1, the larger and more varied ceramic samples may indicate that among these sites are more permanent logging camps which included family groups and single family homestead sites. These interpretations are very tentative, and based on samples which may be biased by variations in surface visibility, disturbance patterns, and collection techniques.

Glass

The presence of flat or window glass was noted at Sites 1A-2, 1J-1, 3F-1, 5B-1, but none was collected. Bottle glass was observed at Sites 1A-2, 1J-1, 1Q-1, 2JJ-1, 3F-1, 5B-1, and 5C-1. Only at those sites where bottle glass was the dominant visible cultural material, or where it appeared to be of interpretive importance, were collections made (Table 2).

At Site 1J-1, bottles with both hand-finished and machine-molded necks were present, as well as a clear bottle glass fragment marked "...1 dor, N.C.." Machine-molding of necks replaced hand finishing about the time of World War I (Fontana and Greenleaf 1962: 100). Both types of bottle necks are also present at Site 1Q-1, as well as a bottle fragment marked "John Walker and Son."

Panel bottle fragments from Site 5C-1 and fragments of bottles with hand finished necks from Site 2N-1 exhibited a purple tint caused by the presence of manganese oxide that characterizes glass made before World War I (Fontana and Greenleaf 1962: 100). A brown bottle base from Site 2JJ-1 is marked "P.D. and Co. 164," which has been used by Parke, Davis and Co. of Detroit, on pharmaceutical bottles since 1875 (Toulouse 1971: 417). A light green bottle glass fragment marked "COD Liver" was also found at Site 2 JJ-1.

TABLE 2
BOTTLE GLASS DISTRIBUTION

	<u>5C-1</u>	<u>2N-1</u>	<u>1Q-1</u>	<u>1J-1</u>	<u>2JJ-1</u>
Color					
Purple	7	4			1
Green	1		1	1	2
Clear	1	3	2	2	
Brown		2			1

Metal Artifacts

Metal artifacts were observed at every historic site located during the survey. Often an extremely wide range of metal containers, utensils, and implements were present, which made a listing of each specific type impractical. In general, only those metal artifacts thought to be functionally or temporally diagnostic were noted in detail. Table 3 summarizes this information.

In addition to aiding in the confirmation of Sites 2N-1 and 2JJ-1 as logging camps, metal artifacts were useful in dating some of the historic sites. At Site 1Q-1 a brass rifle cartridge marked "40-65 WCF" was collected. This cartridge was developed by Winchester in 1887 for use in the Model 86 rifle, which was discontinued in 1935 (Williamson 1952: 452, 460). The presence of flat top and cone top beer cans at Site 1A-2 indicates that this site was occupied until sometime after 1935 (Baron 1962: 327). Open top tin cans were abundant at Sites 1A-2 and 3F-1, while hole-in-top tin cans were observed at Site 5C-1. Sanitary or open-top tin cans were invented in 1904 and replaced the hole-and-cap style by the 1920s (Clark 1977: 18).

TABLE 3

METAL ARTIFACTS

	<u>1A-2</u>	<u>1J-1</u>	<u>1Q-1</u>	<u>2N-1</u>	<u>2JJ-1</u>	<u>3F-1</u>	<u>5A-1</u>	<u>5B-1</u>	<u>5C-1</u>
<u>Observed</u>									
Enamelware	x	x	x				x	x	x
Beer Cans	x								
Barrel Hoops		x		x		x	x		
Cut Nails			x	x					
Wire Nails			x	x	x	x			
Logging Implements				x	x				
Open Top Tin Cans	x					x			
Hole-and-Cap Tin Cans									x

Nails are also useful for dating sites. Drawn wire nails were observed at Sites 1Q-1, 2N-1, 2JJ-1, and 3F-1, while square cut nails were observed at Sites 1Q-1 and 2N-1. Wire nails are scarce in the United States until about 1890, when they begin to outnumber cut nails (Fontana and Greenleaf 1962: 55). Hulse (1977: 10) believes that sites in Michigan's Upper Peninsula which contain a mixture of wire and cut nails probably date between 1870 and 1900.

Enamelware was frequently observed at historic sites and it has been suggested that it was often preferred over ceramic tablewares at economically and geographically isolated communities because it was durable and inexpensive (Commonwealth Associates Inc., 1978: 152-3). One might expect a light durable ware such as this to be common at functionally specific logging camps occupied for short periods of time. At historic sites located in the St. Croix National Scenic Riverway, enamelwares were almost entirely associated with post-1890 occupation areas (Commonwealth Associates Inc. 1978: 153).

Chipped Stone

Chipped stone tools and debitage were the most abundant class of cultural material encountered at prehistoric sites. While other materials such as firecracked rock, bone, and mussel shell were observed at these sites,

because of recent camping and day use, only the chipped stone could be considered of definite prehistoric origin. Unmodified debitage was more common than tools. It was classified according to the amount of cortex present, in an attempt to characterize the stage of the reduction process being carried out at each site. Flake classification was based on the amount of cortex present on the dorsal surface. On irregular fragments, without an easily identifiable dorsal surface, an estimate was made of the amount of the total exterior covered by cortex (Table 4).

The most frequent abundant raw material encountered in the chipped stone assemblages is an opaque chert that occurs in various shades of grey and brown (Table 4). Most specimens exhibit a fine texture and a medium to shiny luster. On the basis of its visual characteristics, this chert can be tentatively identified as coming from the Middle Silurian age Cordell formation (Luedtke 1976: 214). Chert believed to be derived from Silurian dolomite has been reported from a number of sites in the eastern Upper Peninsula (Brose 1970, Cleland and Peske 1968, Franzen 1975). It is very common in the glacial gravels of northern Michigan and comprises a large portion of the "pebble cherts" reported from the area's archeological sites (Luedtke 1976: 217). Other raw materials present which may be derived from glacial deposits include

TABLE 4

COUNTS, TOTAL WEIGHTS, AND AVERAGE WEIGHTS
OF ALL UNMODIFIED DEBITAGE

	Counts				Total Weights (in grams)				Average Weights (in grams)			Site Averages
	Cortex > 50%	Cortex < 50%	No Cortex	Totals	Cortex > 75%	Cortex < 50%	No Cortex	Totals	Cortex > 50%	Cortex < 50%	No Cortex	
<u>Site 2E-1</u>												
Quartz	1	1	1	3	3.07	2.33	.92	6.32	3.07	2.33	.92	2.10
<u>Site 2W-1</u>												
Grey and Brown Chert			9	9			18.79	18.79			2.08	2.08
<u>Site 2Y-1</u>												
Grey and Brown Chert			7	7			7.70	.70			1.1	1.1
Quartzite	3		2	5	15.27		9.61	24.88	5.09		4.80	4.98
Dark Brown Chalcedony			1	1			.75	.75			.75	.75
Quartz			6	6			6.51	6.51			1.09	1.09
<u>Site 2Y-2</u>												
Grey and Brown Chert	2		9	11	4.14		5.05	9.19	2.07		.56	.84
Quartz			1	1			.09	.09			.09	.09
<u>Site 2AA-1</u>												
Grey and Brown Chert	1	1	2	4	1.30	3.12	.91	5.33	1.30	3.12	.46	1.33
<u>Site 2AA-2</u>												
Grey and Brown Chert	3	1	17	21	6.17	.44	5.12	11.73	2.06	.44	.30	.56
Pink Fossiliferous Chert			23	23			10.59	10.59			.46	.46
Grey nonvitreous Chert			10	10			3.27	3.27			.33	.33
White Chert			3	3			.48	.48			.16	.16

Table 4 (Contd)

	Counts				Total Weights (in grams)				Average Weights (in grams)			
	Cortex > 50%	Cortex < 50%	No Cortex	Totals	Cortex > 75%	Cortex < 50%	No Cortex	Totals	Cortex > 50%	Cortex < 50%	No Cortex	Site Averages
<u>Site 2AA-3</u>												
Grey and Brown Cherts		1	10	11		.52	8.98	9.50		.52	.90	
White Chert			1	1			.17	.17			.17	
Quartz			1	1			.07	.07			.07	
<u>Site 2AA-4</u>												
Grey and Brown Cherts	3	3	18	24	10.83	4.64	13.38	28.85	3.61	1.54	.74	1.60
Basalt			1	1			1.51	1.51			1.51	1.51
Quartzite			1	1			.44	.44			.44	.44
Quartz			1	1			.46	.46			.46	.46
<u>Site 2CC-1</u>												
Grey Chert			1	1			.24	.24			.24	.24
Quartz			2	2			1.78	1.78			.89	.89
<u>Site 2DD-1</u>												
Grey and Brown Cherts			9	9			11.57	11.57			1.29	1.29
Quartz		1	8	9		4.0	6.14	10.14		4.0	.77	1.13
<u>Site 2FF-1</u>												
Grey and Brown Cherts	1			1	1.54			1.54	1.54			1.54
Quartz	1			1	.77			.77	.77			.77
<u>Site 2GG-1</u>												
Grey and Brown Cherts			1	1			.28	.28			.28	.28
Quartz			2	2			1.46	1.46			.73	.73
<u>Site 2HH-1</u>												
Grey and Brown Cherts	1		10	11	.63		6.36	6.99	.63		.64	
PROJECT TOTALS	16	8	158	182	43.72	15.05	201.40	260.17	2.73	1.88	1.27	1.43

a grey nonvitreous chert, which may also be of Silurian origin, quartz, quartzite, white chert, basalt, and dark brown chalcedony. An exotic mottled pink and white fossiliferous chert from site 2AA-3 is not known to be available locally and a similar material is reported from a site at the confluence of the Menominee and Little Cedar rivers, Menominee County, Michigan (Buckmaster, personal communication). Table 5 summarizes raw material frequencies for the project. Heat damage, as indicated by either crazing or pot lid fracturing, was noted on nine fragments of grey and brown chert.

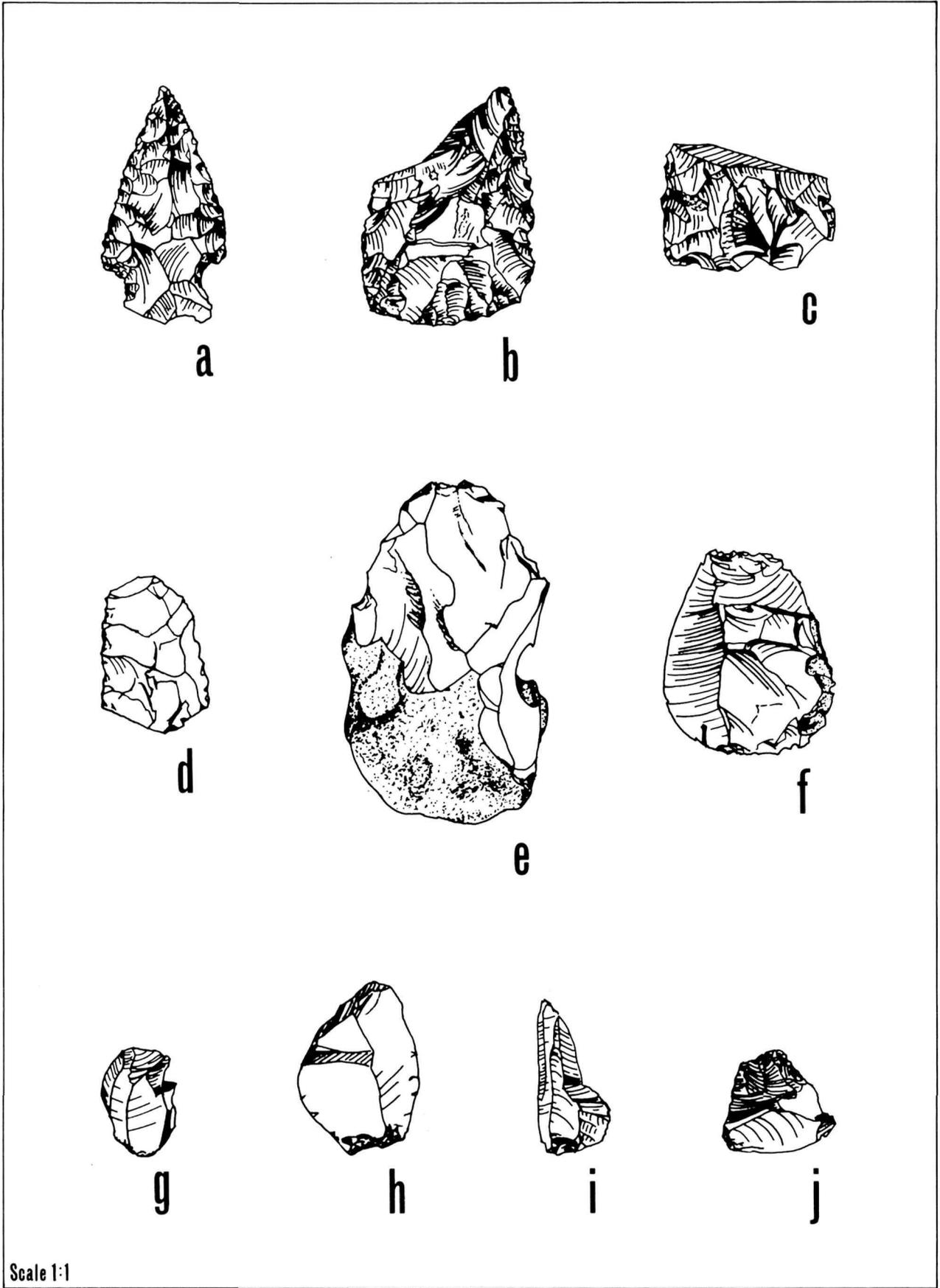
In accordance with their presumed availability nearby, cortical surfaces were observed only on grey and brown cherts, quartz, and quartzite, while no cortex was visible on the exotic pink fossiliferous chert (Table 4). Cortical surfaces generally appeared to be waterworn. If the grey and brown cherts are derived from the Cordell formation, they have probably been transported into the area from the southeast. The Manistique group, of which the Cordell formation is a part, begins approximately 10-15 miles southeast of any of the prehistoric sites being discussed (Dorr and Eschman 1971: 84-86), and glacial and post-glacial erosional processes would prevent any material from this formation from being transported naturally to the northwest.

TABLE 5
RAW MATERIAL FREQUENCIES

Grey and Brown (Cordell?) Cherts	111
Quartz	26
Pink Fossiliferous Chert	23
Grey Nonvitreous Chert	10
Quartzite	6
White Chert	4
Basalt	1
Dark Brown Chalcedony	<u>1</u>
TOTAL	182

The conventional terms, such as projectile point, biface, and scraper, used to classify the stone tools collected during the survey will not be defined here. However, some less conventional terms may require clarification. "Gouged-end artifacts" are associated with bipolar flaking industries and exhibit a convex outer face with several parallel flake scars, a flat or concave inner face with usually one broad flake scar, and a hollow or dished out area produced by multiple hinge fractures that is similar in form to a wood gouge (McPherron 1967: 141). "Bipolar cores" are discussed in detail by Binford and Quimby (1972), and McPherron (1967). Whether these are core tools or unutilized core nuclei has been much discussed, and the question remains open (Binford 1962: 332, Brose 1970). "Retouched flakes" include flakes exhibiting wear or use retouch as well as purposeful retouch, and lack the regular form of scrapers. Stone tool counts are presented in Table 6 and tool weights and measurements are presented in Appendix 2.

The single projectile point recovered during the survey is from Site 2AA-3 and appears to be manufactured from grey Cordell chert (Figure 2a). This point has a bi-convex cross section, triangular blade, and wide corner notching resulting in an expanding stem and slight shoulders. Similar forms recovered from nearby Middle Woodland sites



Scale 1:1



figure 2
CHIPPED STONE

TABLE 6
STONE TOOL AND CORE COUNTS

	2E-1	2W-1	2Y-1	2Y-2	2AA-1	2AA-2	2AA-3	2AA-4	2CC-1	2DD-1	2FF-1	2GG-1	2HH-1	IF-2B-1	IF-2W-2	Totals
Projectile Points							1									1
Bifaces						1		2								3
Bifacial Pebble Chopper								1								1
Gouged-End Artifacts						1	1	1								3
Bipolar Cores						1	2	1							1	5
End Scrapers		1					1	1	2		1	1				7
Retouched Flakes		4	4	2		4	2	2		3		2	2	1		26
Hammerstones							1									1
TOTALS	0	5	4	2	0	7	8	8	2	3	1	3	2	1	1	48

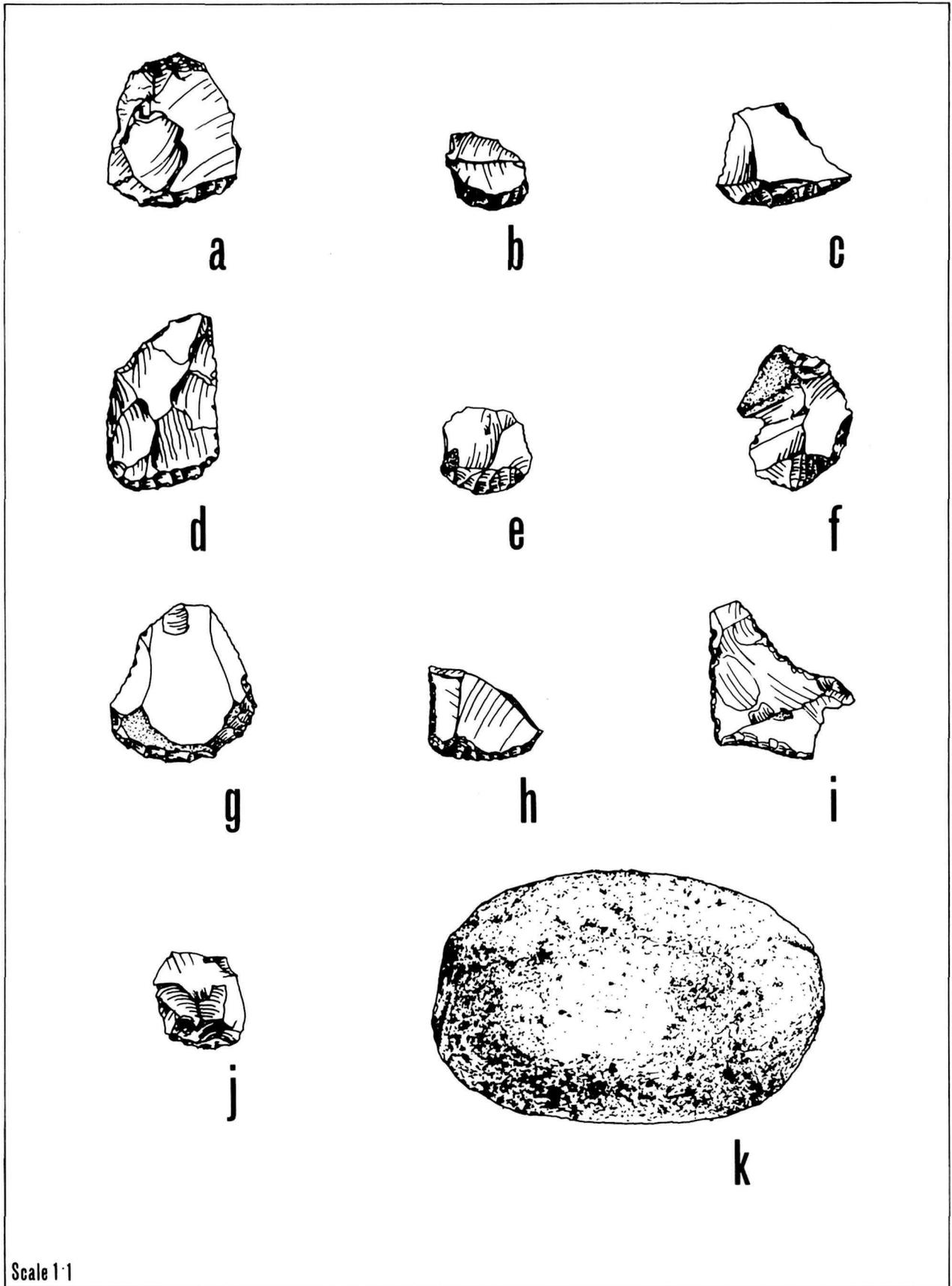
include Lang corner-notched, variety 1 (Cleland and Peske 1968: 35, Figure 12), from Spider Cave along the western shore of the Garden Peninsula; and notched points from the Mero Site on Wisconsin's Door Peninsula and Summer Island (Mason 1966: Figures 1 and 2; Brose 1970: Plate XIX). A conservative interpretation of radiocarbon dates from a number of Lake Forest Middle Woodland components indicates that these sites span the period at least from A.D. 100 to A.D. 400 (Brose 1970: 88-89).

Three biface fragments were collected during the survey (Figure 2b, 2c, 2d). These were all manufactured from grey or brown Cordell chert. The fragment from Site 2AA-2 (Figure 2d) could represent either the proximal or distal section of a small unfinished ovate biface. At Site 2AA-4, two proximal sections of bifaces were collected.

One section has a convex base (Figure 2b) while the other has a thick, irregularly chipped, slightly convex base (Figure 2c). Both appear to be biconvex in cross section and biplano in longitudinal section. A single bifacial pebble chopper was collected from Site 2AA-4 (Figure 2e). This tool was manufactured from a light brown waterworn chert pebble. A smooth cortical surface still covers the proximal portion of this tool.

Gouged-end artifacts were recovered from Sites 2AA-2, 2AA-3, and 2AA-4. All appear to be manufactured from light gray Cordell chert, although the specimen from Site 2AA-3 exhibits a potlid fracture and appears to have been darkened by exposure to heat (Figure 3J). These artifacts are believed to be produced in the same manner as bipolar cores (McPherron 1967: 141), and like bipolar cores their function is not understood. Similar artifacts were recovered from the Juntunen Site in the Straits of Mackinac (McPherron 1967: Plate XXVIII) and some have probably been classified as bipolar cores at other sites because of their technological similarity.

Bipolar cores were recovered from Sites 2AA-2, 2AA-3, and 2AA-4 and a single bipolar core occurred as an isolated find in Item 2W. All cores appear to be grey or brown Cordell chert. Binford and Quimby (1972) have classified bipolar cores on the basis of combinations of three major forms of percussion surfaces. The core from Site 2AA-4 (Figure 2h) appears to be an example of their point-area core (Binford and Quimby 1972: Figure 5). Water-worn cortex covers approximately one half of this specimen. The core designated IF-2W-2 (Figure 2F) and one from Site 2AA-3 (Figure 2g) are examples of opposing ridge cores (Binford and Quimby, 1972: Figure 7). At Site 2AA-2 (Figure 2i), a right angled ridged core was collected. This type is characterized by opposing ridges oriented at



Scale 1:1



figure 3
CHIPPED AND PECKED STONE

right angles to each other (Binford and Quimby 1972: Figure 8). One core from Site 2AA, 3-4 (Figure 2j) is a variety not described by Binford and Quimby. It exhibits ridges of percussion that are adjacent, rather than opposing. Similar cores have been reported from Chippewa County (Franzen 1975) and from the Winter Site in Delta County (Richner 1973).

All seven of the end scrapers recovered appear to be made from flakes of grey or brown Cordell chert (Figure 3a-g). Scrapers from Sites 2GG-1 and 2W-1 have been manufactured on flakes that exhibit some cortex (Figures 3f and 3g). The lateral edges of scrapers from Sites 2W-1, 2AA-3, 2AA-4, and 2GG-1 have been deliberately retouched or worn by use (Figures 3c, 3d, 3f, and 3g). The spur extending laterally from the distal end of the scraper from Site 2AA-3 (Figure 3c) is similar in form to a graver. The scraper fragment from Site 2FF-1 has been darkened by heat and exhibits pot lid fractures (Figure 3b). In general, these scrapers appear similar to those recovered in large numbers at Middle and Late Woodland sites in the eastern Upper Peninsula (Janzen 1968: 139; McPherron 1967: Plate XXXVI; Brose 1970: Plate XX).

Retouched flakes (Figure 3h and 3i) were the most common form of stone tool recovered (Table 6). Except for a flake of white chert from Site 2AA-2 and two flakes of grey nonvitreous chert from Site 2HH-1, these retouched flakes appear to be made from Cordell chert. Small areas of cortex cover portions of four retouched flakes from Sites 2HH-1, 2AA-3, 2AA-4, and 2W-1, and the entire dorsal surface of retouched flake IF-2B-1. Two retouched flakes from Sites 2AA-4 and 2DD-1 have been heat altered.

A single pecked stone implement was collected at Site 2AA-3 (Figure 3k). This quartzite tool may have functioned both as a hammerstone and an anvil. One end has been pecked and slightly flattened by wear, while its lateral face exhibits a basin-like hollow or depression.

In general, the chipped stone assemblages from most of these interior sites located on inland lakes appear to be indicative of the latter stages of the lithic reduction process. Along the north shore of Lake Michigan, Point Detour Bay has been cited as a locale where the initial processing of chert pebbles using the bipolar technique took place (Binford and Quimby 1972: 369). It is believed that nuclei and blanks were then transported to other areas. At this site, 23.6 percent of the total debitage assemblage

exhibited cortex, bipolar cores and core fragments comprised 14.09 percent of the total chipped stone assemblage, and no tools were observed (Binford and Quimby 1972: 365). In contrast, at all of the prehistoric sites except 2AA-2, 2AA-3, and 2AA-4, bipolar cores were absent, cortical flakes were rare, and tools in the form of scrapers and retouched flakes comprised a large proportion of the total assemblage. Although bipolar cores were present at Sites 2AA-2, 2AA-3, and 2AA-4, cortical flakes were still relatively infrequent, and tools remained abundant (Tables 4 and 7).

The interior sites located during this survey also appear to be functionally different from nearby sites along the Great Lake Shores, such as Scott Point, Seul Choix, and Summer Island, where a wider range of activities are represented in comparison with Point Detour Bay. The interior sites exhibit higher tool percentages, as well as being generally smaller in size and density. Aboriginal pottery is present at the Great Lakes sites while absent at the interior sites. At this time it is impossible to determine whether the variation just described might reflect the variation of complementary elements of a single type of settlement system. Temporally diagnostic material was observed at only one site (2AA-3), and this was Middle Woodland. Although the bipolar technique was originally thought to be

TABLE 7

CHIPPED STONE DENSITIES AND PERCENTAGES OF
TOOLS AND CORES IN ASSEMBLAGES

	<u>Estimated Site Area (M²)</u>	<u>Total Chipped Stone</u>	<u>Density of all Chipped Stone/M²</u>	<u>% Tools of Total Chipped Stone</u>	<u>% Cores of Total Chipped Stone</u>
2E-1	20	3	.150	0	0
2W-1	600	14	.023	35.7	0
2Y-1	1575	24	.02	16.7	0
2Y-2	170	15	.088	13.3	0
2AA-1	210	4	.019	0	0
2AA-2	520	64	.123	9.4	1.6
2AA-3	300	21	.070	28.6	9.5
2AA-4	1050	35	.033	17.1	5.7
2CC-1	5	5	1.0	40.0	0
2DD-1	10000	21	.002	14.3	0
2FF-1	15	3	.2	33.3	0
2GG-1	200	6	.03	50.0	0
2HH-1	5	13	2.6	15.4	0

characteristic of the Late Woodland period (Binford and Quimby 1972) it has also been identified in nearby Middle Woodland and possible Late Archaic components (Janzen 1968; Brose 1970; Fitting 1968).

SITE TYPES

All the prehistoric sites located were along the shores of inland lakes. Within this group, there appear to be two subgroups. Sites 2AA-2, 2AA-3, and 2AA-4 contain a wide range of chipped stone artifacts, including bipolar cores, bifacial tools, and gouged-end artifacts (Table 6). The remaining prehistoric sites contained only unifacial tools and less debitage. However, these distinctions should remain tentative pending the systematic collection of representative samples from these sites.

Sites located along inland lakes have been located in other areas within the Upper Great Lakes. At least five small prehistoric sites have been recorded farther west in the Upper Peninsula on inland lakes in southwestern Marquette County (Buckmaster, personal communication). One of these sites contained a small triangular projectile point suggesting a Late Woodland occupation, while the rest lacked temporally diagnostic material. The sites contained

from 10 to 117 fragments of chipped stone, but all lacked ceramics. A larger, intensively studied sample of inland sites from the northern Lower Peninsula of Michigan contains at least 14 sites that are definitely Middle or Late Woodland (Lovis 1978). These sites, located along an interior lake chain, tentatively indicate that this inland area was utilized from late fall through early spring by small groups composed of both males and females. However, Lovis (1978: 10) cautions that "warm season hunting camps may also be present but cannot yet be adequately defined."

The belief that at least during the late prehistoric period, winter camps within the northern Great Lakes would be located in interior areas along lakes and streams is based on a model derived from accounts of historic Chippewa settlement patterns (Fitting 1969; Fitting and Cleland 1969). As Lovis (1978) has indicated, some evidence exists that this model may explain site distributions in the interior of the northern lower peninsula. Buckmaster (personal communication) has also tentatively interpreted the sites along inland lakes in the Menominee watershed as cold season occupations. Recently, Martin (1977: 5) has suggested the sample of known sites in the eastern Upper Peninsula is inadequate for testing this existing settlement model. The prehistoric sites located during the 1978 Hiawatha National

Forest Cultural Resource Survey are important in that they provide data relevant to this research topic of great current interest.

At least six of the ten historic sites located can be tentatively associated with the logging industry due to the presence of logging implements or a nearby logging railroad (Table 8). Of the remaining sites, 1A-2 is unique in that it may represent either a Civilian Conservation Corp. or Prisoner of War camp. Sites 1J-1 and 1Q-1 are smaller in area than the tentative logging industry sites and may represent other functions, such as agricultural homesteads. Both contain a wider range of refuse than most of the logging camps and include evidence of more permanent building materials such as brick or stone. In particular, Site 1Q-1 appears to have been occupied for a long period of time. It should be noted, however, that some logging sites also contained a relatively wide range of domestic refuse including a variety of ceramics (Table 1). Site 5C-1 contained no definite logging related materials, and very little cultural material upon which to base interpretations. Most of the historic sites appear to date between 1900 and 1935, with possible nineteenth century material represented at Site 1Q-1 and 2N-1.

TABLE 8

HISTORIC SITE CHARACTERISTICS

	<u>Associated With Railroad</u>	<u>Logging Implements</u>	<u>Number of Structures (Minimum)</u>	<u>Site Area (M²)</u>	<u>Pre-1900 Artifacts</u>	<u>Pre-WWI Artifacts</u>	<u>Post-WWI Artifacts</u>	<u>Post-1935 Artifacts</u>
1A-1	x							
1A-2			5	4,800			x	x
1J-1			5	1,250		x	x	
1Q-1			4	600	x	x	x	
2N-1	x	x	4	16,100	x	x		
2JJ-1		x	7	3,600		x	x	
3F-1	x		8	11,700		?	x	
5A-1	x		6	5,000				
5B-1	x		10	4,750		?	x	
5C-1			4	2,000		x		

CHAPTER 5
PRELIMINARY EVALUATION OF SIGNIFICANCE

In this chapter, National Register criteria are used to provide a preliminary opinion of the possible significance of each recorded site. However, it has been argued that "the Register is not an effective management tool for any large number of sites" and that "any fixed set of criteria that are broad enough to apply to many cases are also too nonspecific to provide a detailed rationale for assessment of significance in particular cases" (Raab and Klinger 1977: 631). For example, some archeologists believe that any site "may be likely to yield information important in prehistory or history" and that the National Register eligibility criteria "are simply unworkable in an enlightened research and management context" (Schiffer and Gummerman 1977: 246). It has been recommended that the significance of a site be assessed by considering its potential in terms of current and specific research questions (Raab and Klinger 1977; Schiffer and Gummerman 1977). It is hoped that, eventually, state cultural resource plans will be developed to facilitate comparative significance judgments (Fort Burgwin Conference 1978:2). Whenever possible, appropriate research questions will be used, in addition to National Register criteria, in order to strengthen our evaluations.

In attempting to evaluate the significance of the sites located, we are also limited by the amount of information available. Our knowledge of these sites is based upon surface observations and limited shovel testing. The difficulty of making National Register determinations on the basis of surface indications has been mentioned by previous investigators in the area (Polk, Gummerman, and Hulse 1977: 21). Shovel tests do not necessarily remedy this situation, as indicated by the failure of shovel tests to delineate the boundaries or function of the Comet Stove Site (20MK93) (Gummerman, Hulse, and Polk 1977: 10). In some cases, relative significance has been determined by comparing sites of similar age and function and ranking them according to their representativeness and/or condition (Hickman, 1977). At this point in time, however, the sample of inventoried sites in the Hiawatha National Forest is inadequate for such comparative evaluation.

Because of this problem, previous investigators were unable to determine whether the Bissell Creek Camp (20MK94) was "among the best, or worst, preserved" of the total inventory of nineteenth century logging camps (Gummermand, Hulse, and Polk 1977: 11).

Because of the limitations just described, it is not possible to state that any of the sites located clearly meet National Register criteria. Based on our preliminary observations, all of the prehistoric sites recorded will require further assessment to determine their significance. Preliminary evidence indicates they may have scientific significance because of their relevance to current research questions. Specifically, they may enable archeologists to test a settlement system model which suggests that cold-season camps were located in interior areas (Fitting 1969; Fitting and Cleland 1969).

Determining the scientific significance of the historic sites is made difficult by the fact that anthropological and archeological interest in late nineteenth and early twentieth century sites is relatively recent, and research questions are just beginning to be defined. It has been predicted that "data from the last half of the nineteenth century will be considered more as archeologists incorporate problems in social and economic history and cultural geography into their research strategies" (Harris, Price, and Price 1977: 391).

The majority of the historic sites located relate to the logging industry, and there is no question that the logging industry has played a major role in the history

of each county within Hiawatha National Forest, and of the state as a whole. This raises the possibility that some of these logging sites may qualify for the National Register. Specific research questions relevant to logging sites have recently been formulated which illustrate the growing interest in this type of site (Harris, Price, and Price 1977: 400). Some topics suggested include the settlement plans and use of space for various activities within logging camps and general changes in the lumber extraction process (Harris, Price, and Price 1977: 400). Rector (1953) traces a number of major changes in the Lake States lumber industry, which could have had a variety of social and economic, as well as material, ramifications that could be profitably studied through archeological research.

Because historical documents containing information on the location and nature of logging camps are generally scarce (Gummerman, Hulse, and Polk 1977:6-7), locating and studying these sites through archeological survey and excavation may be the best way to approach many aspects of this period. Because of the factors just cited, some logging industry sites could qualify for the National Register, but a final determination for any site will require further assessment of its content and condition. Site 1A-1 is an exception in that it does not appear to meet eligibility criteria because of its poor condition and lack of important associations.

Sites 1A-2, 1J-1, 1Q-1, and 5C-1, which lack visible indications of logging activity, also require further assessment to determine their eligibility for the National Register. Site 1A-2 may have historic significance because of its association with the Great Depression or World War II. Sites 1J-1 and 1Q-1 may be associated with the early twentieth century agricultural development of Delta County. Little preliminary information on the nature of Site 5C-1 is available.

It should be noted that sites not eligible for the National Register may still have a level of significance which would warrant their preservation. A large number of logging industry features recorded in a survey of the St. Croix National Scenic Riverway were determined to be ineligible for the National Register, but were important to the understanding of the local development of the logging industry (Commonwealth Associates Inc, 1977). Even though most of the prehistoric and historic sites located have been disturbed to some extent, it should also be noted that disturbed sites, as well as small or surface sites, can be sources of significant archeological data (Talmage and Chester, 1977).

CHAPTER 6
IMPACT EVALUATION

Predicting the impact which the planned undertakings could have on cultural resources is difficult because few attempts have been made to study the physical effects of most resource management practices. Most studies on the effects of modern land altering practices on cultural resources deal with agricultural activities or freshwater inundation (Schiffer and Gummerman 1977; Lenihan, et al 1978; Ford, Relingson and Medford 1972: 300-301). When forecasting impacts on a site-by-site basis, detailed information is also needed on site characteristics such as depth and extent. Often, surface indications and shovel testing do not provide enough information to adequately forecast impacts. However, using the data available, some general predictions can be made. Surface indications and limited shovel testing indicate that at least portions of all the sites located occur at or near the surface.

Table 9 summarizes the processes which may impact the cultural resources recorded, as well as past and on-going destructive processes. Based on discussions with Forest Service personnel, the direct impact of the various undertakings can be estimated. For some undertakings, this impact may vary according to which of two or more alternative techniques are chosen to accomplish management objectives.

Table 9

IMPACT SUMMARY

Wildlife Opening Construction	Direct Potential Impacts		Erosion Control	Various	Control Burn	Gravel Pit	Ongoing Destruction Processes		Past Impacts	
	Road Construction	Site Preparation					Erosion	Vandalism	Tree Planting	Road Construction
1A-1	x									
1A-2	x							x		
1J-1		x						x		
1Q-1	x							x		
2N-1									x	
2JJ-1			x							x
3F-1				x					x	
5A-1					x					x
5B-1						x				x
5C-1	x									x
2E-1			x					x		
2W-1			x					x		
2Y-1			x					x		
2Y-2			x					x		
2AA-1			x					x		
2AA-3			x					x		
2AA-4			x					x		
2CC-1			x					x		
2DD-1			x					x		
2FF-1			x					x		
2GG-1			x					x		
2HH-1			x					x		

Sites 1A-1, 1A-2, and 1Q-1 are located in items where wildlife opening construction is planned. The impact of this activity could vary considerably depending upon whether timber is felled by chainsaw or heavy equipment. If chainsaw felled timber is removed from the area, additional impacts could occur through the use of heavy equipment. The portions of Sites 1A-2 and 1Q-1 that are located in areas that are already cleared probably are not directly threatened by the activity.

Road construction is planned in the vicinity of Sites 1J-1 and 5C-1. It seems reasonable to assume that serious damage through the use of heavy equipment would occur in any portion of these sites crossed by a road. However, in most cases, road placement is flexible enough to permit sites to be avoided. In the case of Site 5C-1, stakes and blazes were observed which indicated such measures were necessary. Before this report was prepared, District personnel were consulted so that steps could be taken to avoid damage to this site.

In the vicinity of Site 2N-1, site preparation is planned. The actual impact of this activity could vary depending on the extent to which heavy equipment is used and whether timber is removed from the area after being felled. In a study conducted in the Sawtooth

National Forest of Idaho, site preparation involving scarification was found to moderately or severely disturb at least the upper 6 inches of an experimental archeological site (Gallagher, 1977). Although scarification may not be a practice relevant to the planned site preparation in Item 2N, much of the damage documented by Gallagher (1977) was a result of the use of heavy equipment to pile slash. This activity could pose a similar threat to cultural resources in Hiawatha National Forest in areas where site preparation, wildlife opening construction, or timber sales might occur.

At Site 5A-1, the use of heavy equipment, rather than the actual controlled burning planned, poses the greatest threat. However, at both this site and Site 5B-1, which is near a gravel pit, avoidance should be possible.

Erosion control threatens the largest number of the cultural resources recorded (Table 9). Heavy equipment and the possible use of on-site material for the construction of diversions would very likely cause extensive damage to these sites, because, like all of the others recorded during our survey, portions of these sites are at or near the surface.

Indirect impacts are generally more difficult to forecast than direct impacts. One important indirect threat is the possible increase in vandalism caused by the various undertakings. Even slight soil disturbances can increase the visibility of sites and make them more vulnerable. The various undertakings will bring more people into each area, including Forest Service personnel, private contractors, and recreationists utilizing access roads constructed or opened for each particular undertaking. The construction of new roads or the widening of old ones for the movement of heavy equipment to and from an undertaking may also constitute an indirect impact in some areas.

While not always directly related to planned management activities, ongoing destructive processes are seriously damaging most of the sites located. An ironic fact is that many sites were discovered because they have been exposed by these processes. Ongoing vandalism poses the most serious threat to historic sites and much damage has already occurred (Martin 1977). Because of the extent of this problem, even historic sites not previously disturbed should be considered to be seriously threatened. Erosion, largely the result of intense recreational use, has affected all the prehistoric sites located, and appears to be increasing.

Some sites have been damaged by processes that no longer directly threaten them (Table 9). Roads have obliterated portions of Sites 5A-1 and 5B-1, and attempts to widen them could cause further damage. Tree planting has disturbed portions of Sites 2N-1, 5A-1, and 5C-1. However, it should not be assumed that tree planting, or ongoing destructive processes such as erosion and vandalism, automatically destroy the value of a site and enable it to be "written off." According to Roper (1976: 372), in some cases plowing may not laterally displace artifacts as was once thought, so even sites where furrows have been plowed for tree planting may not be totally disturbed. Archeologists are beginning to study the various natural and cultural processes which modify cultural deposits and in so doing, may be able to compensate, in some degree, for their effects (Schiffer and Gummerman 1977: 297). For example, vandals destroying historic sites may exhibit predictable patterns relating to their interest in whole bottles and metal implements which can be located with metal detectors.

CHAPTER 7
RECOMMENDATIONS

Avoidance is recommended to mitigate the expected project specific adverse direct impacts on historic Sites 1A-1, 1A-2, 1J-1, 1Q-1, 2N-1, 3F-1, 5A-1, 5B-1 and 5C-1. It has recently been suggested that preservation should be the preferred mitigation strategy, and that data recovery should be employed "only when no prudent and feasible alternative exists" (Fort Burgwin Conference 1978: 3). In comparison to the area of each item involved, the extent of each of these sites is small. Because of this, and the apparent flexibility of most of the management activities which threaten them, it appears that avoidance would not seriously interfere with multiple use management objectives.

Because of the difficulty of determining the exact extent of these sites and the possibility of indirect impacts, if possible, a buffer zone surrounding them should also be avoided. A zone 300 feet wide would probably be sufficient, although this figure could certainly vary from site to site. Land altering activities near known sites should also be monitored, perhaps by archeological paraprofessionals. If some areas cannot be avoided, additional investigation to evaluate their significance is recommended.

At historic sites, this would involve documentary research, interviews with local informants, and text excavation.

Based on conversations with Forest Service personnel and the experiment conducted by Gallagher (1977:14), we can recommend the use of hand-held tools rather than heavy equipment if it is decided to cut timber, pile brush, or plant seeds or trees in the area of a site. It is also recommended that Sites 2JJ-1, 2E-1, 2W-1, 2Y-1, 2Y-2, 2AA-1, 2AA-2, 2AA-3, 2AA-4, 2CC-1, 2DD-1, 2FF-1, 2GG-1 and 2HH-1, be avoided by planned erosion control activities. However, these sites are also threatened by ongoing destructive processes which avoidance cannot mitigate. Since the erosion which is disturbing these sites appears to be caused by recreationists, closing these areas to all motorized vehicles and prohibiting firebuilding and camping in site areas could help prevent some damage. Unless this erosion can be stopped quickly without land disturbing activities, such as diversion construction, the research interpretive and historical value of these sites will continually decrease. Since reversing this erosion without disturbing sites appears to be difficult, it seems likely that further investigation will be necessary. At a minimum, this should involve systematic test excavation. Because of their relevance to the current research interests of archeologists working in the Upper Great Lakes, it is important that the condition of these sites be closely monitored.

Of the 13 prehistoric sites located, 12 are in the site Likelihood Zone 2 defined by Martin (1977: 141) and one is in site Likelihood Zone 1. Because of its project specific nature, our survey work cannot serve as a statistical test of Martin's hypotheses. However, the discovery of these sites suggests that her recommendations concerning the high risk nature of certain areas within Zone 2 have validity.

Ongoing vandalism may be among the most difficult processes to mitigate. Enforcement of the 1906 Antiquities Act has been hampered by the difficulty of apprehending and successfully prosecuting violators. Although posting notices indicating the illegality of relic collecting on federal land may be of some help, additional measures may be necessary. Closing areas around sites to all motorized vehicles would help limit vandalism because of the general decrease in use, as well as by forcing vandals to carry shovels, metal detectors, and relics in and out of the area by foot. If vandalism continues to increase, further investigation of the site being affected may eventually be necessary. Part of the research potential of sites already damaged by vandalism, erosion, tree planting, and road construction, may lie in discovering regularities in these transformation processes.

If it is decided to proceed with the undertakings planned for those items where partial coverage indicated the presence of sensitive areas, some additional survey work is necessary. These sensitive areas are all located along the shores of inland lakes in Items 2E, 2F, 2L, 2P, 2Q, 2R, 2S, 2U, 2W, 2Y, 2Z, 2BB, 2CC, 2FF, 2GG, 2HH, 2II and 2JJ, (Exhibit A-2).

The scope and approximate cost structure of this additional survey work would probably be similar to that specified for similar areas in the 1978 Hiawatha Forest Cultural Resource Survey (Proposals 62-078-P16, 62-078-P16A, and 62-078-P16B).

INDIVIDUALS CONSULTED OR INTERVIEWED

Dr. Marla Buckmaster	Northern Michigan University
Dr. William Lovis	Michigan State University
Mr. John Richards	Northern Michigan University
Mr. Robert Miley	USDA Forest Service
Mr. Allen Suberniak	USDA Forest Service
Mr. Dick Pierce	USDA Forest Service
Mr. Tom Hubbard	USDA Forest Service
Mr. Dave Note	USDA Forest Service
Mr. Jim Klus	USDA Forest Service
Dr. Jan Brashler	USDA Forest Service
Mr. Jim Evers	USDA Forest Service
Mr. Gordon Cole	USDA Forest Service
Dr. John Halsey	State Archeologist
Ms. Barbara Mead	Assistant State Archeologist

BIBLIOGRAPHY

- Baron, Stanley
1962 Brewed in America, A History of Beer and Ale in the United States. Little, Brown, and Co., Inc.
- Binford, Lewis R.
1962 An Archeological Perspective. Seminar Press, New York.
- Binford, Lewis R., and George I. Quimby
1962 Indian Sites and Chipped Stone Materials in the Northern Lake Michigan Area. In An Archeological Perspective, edited by Lewis R. Binford, pp. 346-372. Seminar Press, New York.
- Brose, David S.
1970 The Archeology of Summer Island: Changing Settlement Systems in Northern Lake Michigan. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 41.
- Clark, Hyla M.
1977 The Tin Can Book. New American Library, New York.
- Cleland, Charles E.
1966 The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 29.
- Cleland, Charles E., and G. Richard Peske
1968 The Spider Cave Site. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 34, pp. 20-60.
- Commonwealth Associates Inc.
1977 An Archeological Survey of the St. Croix National Scenic Riverway, Phase I Report. Report No. 1815.
- Commonwealth Associates Inc.
1978 An Archeological Survey of the St. Croix National Scenic Riverway, Phase II, Report No. 1897.
- Conway, Thor A.
1976 Heartland of the Ojibway. Paper Presented at the 1976 Canadian Archeological Association Meetings, Ottawa.

- Cushion, J. B. and W. B. Honey
1953 Handbook of Pottery and Porcelain Marks.
Faber and Faber Ltd., London.
- Demeter, C. Stephan, and William L. Lowery
1977 Archeological and Historical Investigations
at the Berrien Springs Jail Site. Michigan
Archeologist 23: 2-3.
- Dice, L. R.
1943 The Biotic Provinces of North America.
University of Michigan Press, Ann Arbor.
- Dorr, J. A. and D. F. Eschmann
1970 The Geology of Michigan. University of
Michigan Press, Ann Arbor.
- Fitting, James E.
1968 The Prehistory of Burnt Bluff. University of
Michigan Museum of Anthropology Anthropological
Papers, No. 34.
- Fitting, James E.
1969 Settlement Analysis in the Great Lakes Region.
Southwestern Journal of Anthropology, 25:4:360-77.
- Fitting, James E.
1970 The Archeology of Michigan. Natural History
Press, Garden City.
- Fitting, James E.
1974 The Nelson Site. The Michigan Archeologist
20:3-4:121-138.
- Fitting, James E. and Charles E. Cleland
1969 Late Prehistoric Settlement Patterns in the
Upper Great Lakes. Ethnohistory 16:4:286-316.
- Fontana, Bernard L. and J. Cameron Greenleaf
1962 Johnny Ward's Ranch: A Study in Historic
Archeology. The Kiva 28:1-2. Tucson.
- Ford, J. L., M. A. Rolingson and L. D. Medford
1972 Site Destruction Due to Agricultural Practices.
Arkansas Archeological Survey, Research Series,
No. 3, Fayetteville.
- Fort Burgwin Conference on National Archeological Policies
1978 Report of the Fort Burgwin Conference on
National Archeological Policies.
- Franzen, John G.
1975 An Archeological Survey of Chippewa County, Michigan.
Michigan Department of State, Michigan History Division,
Archeological Survey Report Number 5.

- Gallagher, Joseph G
n.d. Scarification and Cultural Resources: An Experiment to Evaluate Alternate Management Directions. Plains Anthropologist (In Press).
- Godden, Geoffrey A.
1964 Encyclopaedia of British Pottery and Porcelain Marks. Bonanza Books, New York.
- Gummerman, Melanie I., Charles Hulse, and Michael R. Polk
1977 The Comet Stove Site and Related Sites. Michigan State University Museum Archeological Survey Reports, No. 23.
- Harris, S. E., J. E. Price, and C. R. Price
1977 The Archeology of the Logging Industry in the Little Black River Watershed. In Conservation Archeology, edited by M. B. Schiffer and G. J. Gummerman, Academic Press, New York, pp. 391-400.
- Hickman, Patricia P.
1977 Problems of Significance: Two Case Studies of Historical Sites. In Conservation Archeology, Edited by M. B. Schiffer and G. J. Gummerman Academic Press, New York, pp. 269-276.
- Hinsdale, Wilbert B.
1931 Archeological Atlas of Michigan. University of Michigan Press, Ann Arbor.
- Hulse, Charles A.
1977 Archeological Evaluation of the Gladstone Cabin Site (20DE21), Delta County, Michigan. Michigan State University Museum, Archeological Survey Report, No. 26.
- Hyde, Charles K.
1978 The Upper Peninsula of Michigan, An Inventory of Historic Engineering and Industrial Sites. Historic American Engineering Record, Office of Archeology and Historic Preservation. Heritage Conservation and Recreation Service, U.S. Department of the Interior.
- Janzen, Donald E.
1968 The Naomikong Point Site and the Dimensions of Laurel in the Lake Superior Region. Anthropological Papers, Museum of Anthropology University of Michigan, No. 36.
- Lenihan, D. J., et al
1977 The Preliminary Report of the National Reservoir Inundation Study. United States Department of the Interior, National Park Service, Southwest Cultural Resources Center, Santa Fe.

- Lovis, William A.
1978 A Numerical Taxonomic Analysis of Changing Woodland Site Location Strategies on an Interior Lake Chain. Michigan Academician 11 (1). (In Press).
- Lovis, W. A. and M. Holman
1976 Subsistence Strategies and Population: A Hypothetical Model for the Development of Late Woodland in the Mackinac Straits - Sault Saint Marie Area. Michigan Academician 8: 267-276.
- Luedtke, Barbara Ellen
1976 Lithic Material Distributions and Interaction Patterns During the Late Woodland Period in Michigan. University Microfilms, Ann Arbor.
- Martin, Susan R.
1977 A Preliminary Cultural Resource Management Study of the Hiawatha National Forest, Michigan. Michigan State University Museum Archeological Survey Report, No. 20.
- Mason, Ronald J.
1966 Two Stratified Sites on the Door Peninsula of Wisconsin. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 26.
- Maybee, R. H.
1973 Michigan's White Pine Era: 1840-1900. Michigan Department of State, Michigan History Division, J. M. Munson Fund Publication, No. 1.
- McPherron, Alan
1967 The Juntunen Site and the Late Woodland Prehistory of the Upper Great Lakes Area. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 30.
- Polk, Michael R., Melanie D. Gummerman, and Charles A. Hulse
1977 An Archeological Survey of the Nogi Split Mill and Related Sites. Michigan State University Archeological Survey Reports, No. 21.
- Prahl, Earl J. and W. R. Farrand
1968 The Geology of Burnt Bluff. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 34, pp. 4-19.
- Raab, Mark L. and Timothy C. Klinger
1977 A Critical Appraisal of "Significance" in Contract Archeology. American Antiquity 42:4.
- Ramsay, John
1939 American Potters and Pottery. Colonial Press Inc., Clinton, Mass.

- Rector, W. G.
1953 Log Transportation in the Lake States Lumber Industry, 1840-1918. Arthur H. Clarke Co., Glendale.
- Richner, Jeffrey J.
1973 Depositional History and Stone Tool Industries at the Winter Site: A Lake Forest Middle Woodland Cultural Manifestation. Unpublished M. A. Thesis, Western Michigan University, Kalamazoo.
- Roper, Donna C.
1976 Lateral Displacement of Artifacts Due to Plowing. American Antiquity, 41:3:372-375.
- Sawyer, A. L.
1911 A History of the Northern Peninsula of Michigan and its People. Lewis Publishing Co., Chicago.
- Schiffer, Michael B. and George J. Gummerman, Editors
1977 Conservation Archeology. Academic Press, New York.
- Talmage, Valerie, and Olga Chesler
1977 The Importance of Small Surface, and Disturbed Sites as Sources of Significant Archeological Data. Cultural Resource Management Studies, National Park Service, U.S. Department of the Interior, Washington.
- Thorn, C. Jordan
1947 Handbook of Old Pottery and Porcelain Marks. Tudor Publishing Co., New York.
- Toulouse, J. H.
1971 Bottle Makers and Their Marks. Thomas Nelson Inc., New York.
- United States Department of Agriculture Soil Conservation Service and Forest Service
1977 Soil Survey of Delta County and Hiawatha National Forest of Alger and Schoolcraft Counties, Michigan.
- United States Department of Agriculture, Forest Service
n.d. Hiawatha National Forest Land Form - Soils Map.
- Williamson, Harold
1952 Winchester: The Gun That Won the West. Combat Forces Press, Washington, D.C.
- Yarnell, Richard A.
1964 Aboriginal Relationships Between Culture and Plant Life in the Upper Great Lakes Region. University of Michigan Museum of Anthropology, Anthropological Papers, No. 23, Ann Arbor.

APPENDIX 1

MICHIGAN DEPARTMENT OF STATE
RICHARD H. AUSTIN SECRETARY OF STATE



LANSING
MICHIGAN 48918

October 25, 1978

MICHIGAN HISTORY DIVISION
ADMINISTRATION, ARCHIVES,
HISTORIC SITES, AND PUBLICATIONS
3423 N. Logan Street
517-373-0510
STATE MUSEUM
505 N. Washington Avenue
517-373-0515

Mr. John G. Franzen
Human Resources Planning Department
Commonwealth Associates, Inc.
209 E. Washington Avenue
Jackson, Michigan 49201

Dear Mr. Franzen:

I have searched our files and have found that we have record of six archaeological sites in the sections you listed in your letter of September 28, 1978. These sites are:

20CH52	Point Iroquois Reservation	T47N, R3W, sec. 25
20CH10	Chippewa Cemetery	T47N, R5W, sec. 21
20CH29	Silver Creek	T47N, R6W, sec. 3
20CH81	Indian Field #4	T47N, R6W, sec. 4
20CH9	Crane Clan Village	T47N, R6W, sec. 10
20DE6	Little Lake Village	T40N, R21W, sec. 8

No new sites have been reported in the areas you are interested in since Susan Martin completed her 1977 inventory of the Hiawatha National Forest. Her summary descriptions of the sites listed above are thorough and include almost all the information we are aware of concerning them.

I am including the relevant part of an undated memo written here by Jim Fitting concerning 20CH10. This is referred to, but not quoted by Martin. We have a few additional references to 20CH52 which Martin does not list. These are: Kappler, Charles J., 1904 Indian Affairs: Laws and Treaties, Vol. II, Washington, D.C.: Government Printing Office; Royce, Charles C., 1899 Indian Land Cessions in the United States, 18th Annual Report of the BAE, 1896-97, Part II; and a Tanner manuscript at MSU.

Kathryn Eckert of our Historic Sites staff has also looked over the list of sections you are interested in and she has indicated that the Martin report represents our current state of knowledge in these areas and has nothing new to add.

Please contact us if we can be of further assistance.

Sincerely,

Barbara Mead

Barbara Mead
Assistant Archaeologist
Michigan History Division

RECEIVED
ENVIRONMENTAL PLANNING
OCT 27 1978

APPENDIX 2

APPENDIX 2

WEIGHTS (in Grams) AND MEASUREMENTS (in Centimeters)
OF STONE TOOLS AND CORES

Catalog No.	Description	Material	L	W	T	Wt.
2W1-1	Retouched flake fragment	Grey chert	1.93	1.60	.36	1.24
2W1-2	Retouched flake	Grey chert	2.53	1.82	.37	1.90
2W1-3	Retouched flake	Grey chert	2.53	1.70	.40	1.31
2W1-4	End scraper	Grey chert	2.55	2.02	.71	2.84
2W1-5	Retouched flake fragment	Grey chert	.98	.78	.17	.31
2FF1-1	Scraper fragment (heat damaged)	Grey chert	1.42	1.38	.40	.71
2AA4-1	Bifacial pebble chopper	Lt. tan chert	5.91	3.53	3.00	61.47
2AA4-2	Biface fragment	Grey chert	2.24	3.18	.82	5.52
2AA4-3	End scraper	Grey chert	3.31	2.10	.64	3.62
2AA4-4	Retouched flake	Grey chert	3.03	2.70	.50	3.20
2AA4-5	Bipolar core	Lt. brown chert	3.04	2.00	1.54	2.54
2AA4-6	Gouged-end artifact	Grey chert	2.03	1.52	.42	1.31
2CC-1	End scraper	Grey chert	1.49	1.67	.45	1.27
2CC1-2	End scraper	Grey chert	2.54	2.33	.70	4.98
2DD1-1	Retouched flake (heat damaged)	Grey chert	3.13	2.55	.40	2.03
2DD1-2	Retouched flake	Grey chert	1.91	1.05	.13	.41
2DD1-3	Retouched flake	Grey chert	1.32	.91	.19	.24
2AA3-1	Projectile Point	Grey chert	4.25	2.17	.76	6.36
2AA3-2	Side scraper	Grey chert	1.76	2.37	.55	1.95
2AA3-3	Retouched flake	Grey chert	2.70	1.82	.62	2.70
2AA3-4	Bipolar core	Lt. brown chert	1.85	2.04	.97	2.07
2AA3-5	Bipolar core fragment	Grey chert	1.95	1.30	.77	1.96
2AA3-6	Gouged-end artifact	Brown chert	1.49	1.40	.44	1.01
2AA4-7	Retouched flake	Dark grey chert (heat damaged)	1.50	1.25	.29	.50
2AA4-8	Biface fragment	Brown-grey mottled chert	4.14	3.08	.67	8.78
2AA4-9	Possible core fragment	Grey quartzite	5.86	3.99	2.17	7.08
IF2W-2	Bipolar core	Grey chert	3.58	3.07	1.50	12.61
2AA2-1	Retouched flake	Brown chert	2.10	1.92	.47	1.86
2AA2-2	Gouged-end artifact	White chert	2.30	1.87	.52	2.39
2AA2-3	Retouched flake	White-tan mottled chert	1.80	1.82	.42	1.22
2AA2-4	Bipolar core	Lt. brown chert	2.74	1.31	.73	2.26
2AA2-5	Retouched flake	White chert	2.00	1.42	.19	.47
2AA2-6	Biface fragment	Grey chert	2.80	1.93	.74	3.93
2AA2-7	Retouched flake	Grey chert	.84	.70	.14	.15

Appendix 2 (Contd)

<u>Catalog No.</u>	<u>Description</u>	<u>Material</u>	<u>L</u>	<u>W</u>	<u>T</u>	<u>Wt.</u>
2AA3-7	Hammerstone	Quartzite or sandstone	7.25	4.60	3.56	139.72
2AA3-8	Retouched flake	Lt. brown chert	2.35	1.82	.39	1.32
2Y2-2	Retouched flake	Grey chert	1.23	.90	.31	.27
2GG1-1	End scraper	Grey chert	2.66	2.51	.35	2.79
2GG1-2	Retouched flake	Grey-tan mottled chert	2.50	1.59	.24	1.07
2GG1-3	Retouched flake	Grey chert	2.35	2.40	.50	1.97
2HH1-1	Retouched flake	Lt. grey chert	1.54	1.97	.37	.78
2HH1-2	Retouched flake	Lt. grey chert	2.18	1.49	.41	.58
2Y1-1	Retouched flake	Grey chert	2.29	2.17	.40	1.71
2Y1-2	Retouched flake	Grey chert	2.54	1.73	.80	2.84
2Y1-3	Retouched flake	Grey chert	1.95	.81	.30	.48
2Y1-4	Retouched flake	Grey chert	2.13	2.02	.21	.87
2Y2-1	Retouched flake	Grey-white chert (heat damaged)	1.78	1.10	.37	.76
IF2B-1	Retouched flake	Dark grey chert	3.93	2.42	.50	5.05

APPENDIX 3

January 16, 1979
William A. Lovis
5004 Park Lake Road
East Lansing, Michigan
48823

James E. Fitting, Ph.D.
Manager
Human Resources Planning Department
Commonwealth Associates, Inc.
209 East Washington Avenue
Jackson, Michigan 49201

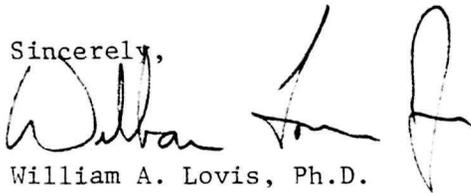
Dear Dr. Fitting:

Enclosed please find several documents relating to the Final Report on Contract No. 53-56A1-8-00063 between Commonwealth Associates Inc. and the Hiawatha National Forest. The first enclosure is a list of my comments on the draft document. For the most part these tend to bolster rather than alter statements made in the report. I find that these are of a minor nature, and do more in the way of clarifying a good report than criticizing it. Attached to the comments is a reprint of an article from Science magazine which I refer to at different points. The final enclosure is a peer review of the document which tends to amplify some of the points made by the author. I have also included the draft copy of this report as per our agreement.

On the whole, I find this a well executed management document. This may in large part be due to the fact that I agree with the directions taken in terms of research design, evaluations, and recommendations, and am familiar with the problems involved in evaluating sites based upon survey data. The preliminary site data presented in the report will also be of use to researchers working on both historic and pre-historic problems in this region. More importantly, I feel that the research and report fulfill the intent of the Interim Management Guidelines for the Hiawatha National Forest. In the future, this data will be useful in further modifying predictive statements about site location in the upper peninsula.

I hope you find my comments and review of value in preparing the final draft. If I can be of further assistance, or if any of my comments need clarification, feel free to contact me.

Sincerely,

A handwritten signature in dark ink, appearing to read 'William A. Lovis', with a stylized flourish extending to the right.

William A. Lovis, Ph.D.

cc:WL

PEER REVIEW

by William A. Lovis, Ph.D.

This report summarizes the history, methods, and results of a cultural resources survey conducted during 1978 by Commonwealth Associates, Inc. within the Hiawatha National Forest in Michigan's upper peninsula. Overall, this is a well-written professional document. The majority of my comments are trivial, and have been submitted to Commonwealth Associates, Inc. so that the need for their inclusion may be evaluated. As is the case with virtually any archaeological report, however, certain facets of the report contents warrant further summary and elaboration.

The first two chapters of the report, covering the Introduction and Setting are rather straightforward. Given the number of environmental and cultural summaries prepared on this part of the upper peninsula Chapter 2 is clearly sufficient to the purposes of the this project. Field methodology is presented in Chapter 3. Since both the survey and recording procedures are commensurate with current field methods for such environments there is no basis for criticism. Several points can benefit from elaboration, however.

Primary among these is that there are a variety of ways in which partial coverage of units slated for survey may be attained. One of the more obvious ways to reduce coverage is by increasing the distance between both transects and shovel tests. In certain situations this might be a desirable approach; for instance in areas with either higher visibility or a known tendency toward larger site sizes. In wooded situations with relatively small site sizes, however, this approach introduces a problem whereby the modality of recovered site sizes might increase to a degree where very low recovery rates ensue; in effect selecting for larger sites in the population. The approach

taken by the Commonwealth Associates, Inc. survey appears desirable in areas with low site size characteristics and low surface visibility. That is, stratification based upon environmental criteria, and partial coverage of each stratum within each survey unit, but with no reduction of either transect or test pit intervals. This has the following advantages, 1) site size recovery characteristics are similar for both total and partial coverage situations, 2) environmental stratification allows sites to be analyzed with respect to their locational characteristics, thereby adding data by which existing models may be refined, 3) increasing the number of test units per unit area in low visibility situation increases the probability of recovering buried sites. Such is not the case with either increased interval strategies, or strategies which do not include stratification. Thus, the Commonwealth Associates, Inc. field approach accomodates these potential recovery problems rather well.

A linked problem in all such surveys employing shovel tests is, as the report indicates, the limited ability of shovel tests and/or surface collection to provide accurate data on site size or other characteristics. Although such evaluative materials may occassionally be extracted using these techniques, such data gathering lies more apprpriately in the arena of evaluative test excavation. This problem is not necessarily unique to forested situations, either, and points out that extreme caution is necessary when evaluating sites on limited recovery techniques. In order to reflect this problem Chapter 5 is entitled Preliminary Evaluation of Significance.

Chapter 4 provides the data base for these significance evaluations, including item, site, and artifact descriptions, as well as a section on site types. It is here that chronological and tentative functional interpretations are made. Although elaboration of the former must await further

information, the artifact identifications and dating are competently done. In the realm of pure research at least one testable hypothesis can be extracted from the discussion of historic site types, and approached via a combination of documentary and archaeological data i.e. one dealing with the relationship between ceramic types, site types, and group sexual composition. This in itself may provide further direction for the investigation of lumber period phenomena.

The assignation of prehistoric sites recovered during survey to winter occupations is made in a well documented discussion, suffering only from a general archeological inability to currently be confident about such interpretations. This is a result of poor faunal and floral preservation, precluding confident seasonal statements, and a lack of research on small interior sites. Thus, posing the hypothesis that these are winter occupations provides a credible working framework for future research. In the face of poor subsistence related data, however, we find that such models are formulated upon ethnographic data, passive analysis of environmental potentials on a seasonal basis, locational differences, and/or differences in site structure. Despite the fact that these independent avenues appear to corroborate one another, it is patently clear that the question remains open, and that this could be a productive area of future research. Given this, the preliminary evaluations of significance appear well founded in current research directions.

The points made about vandalism in Chapter 6 are well taken, and parallel Martin's views on the topic. While not confined to the Hiawatha National Forest, it is apparent that cultural resources there may, in the future if not the present, receive as much attention from collectors as from cultural resource managers. This problem is accentuated as public access is increased. While this report is not an appropriate forum for thorough discussion of the problem

and potential solutions, this definitely warrants further attention.

The final chapter of the report provides recommendations for the management of cultural resources located during field investigation. A preservationist approach is justifiably taken here; mitigation being viewed as a last alternative. Other than recommendations such as avoidance, the creation of buffer zones, monitoring, etc., the scope is limited by the degree to which precise site information can be extracted from survey data. For example, exact site size estimates cannot be made, nor is the depth of the cultural deposits known. Thus, the parameters of any further investigations at these sites perforce remains vague. The long term impacts of vandalism, however, are clearly underscored by the fact that future investigation of vandalized sites may be necessary.

Of further note is the apparent congruence of site locations recorded during the Commonwealth Associates, Inc. survey with the zones of high cultural resource potential outlined in the Hiawatha National Forest Interim Cultural Resource Management Guidelines; sites being located in Zones I and II. The validity of some of the predictive statements in the Interim Guidelines are enhanced by both these results, and the recommendations for additional survey in certain inland lake parcels. It appears that the Guidelines are meeting their management objectives.

In summary, I find this report a nicely executed survey and management document. This is based upon the use of a well designed research strategy, an obviously intimate knowledge of the areas history, prehistory and ongoing research, as well as the basis and manner by which both evaluations and recommendations were forwarded. Likewise, the value of this report in a pure research milieu should not be underestimated. Significant data for both prehistoric and historic sites research is presented, further emphasizing the potential contributions of cultural resource survey.

