Red Lake County, Minnesota:
An Archeological & Geomorphological Resources Inventory & Appraisal

Austin A. Buhta, Rolfe D. Mandel,
Linda Palmer, and L. Adrien Hannus

Archeological Contract Series 258

Prepared by:
Archeology Laboratory
Augustana College
2032 South Grange Avenue
Sioux Falls, South Dakota 57105

Prepared for:
The Oversight Board of the
Statewide Survey of Historical
and Archaeological Sites and the
Minnesota Historical Society
345 Kellogg Boulevard West
St. Paul, Minnesota 55102-1906

This project was funded by the Arts and Cultural Heritage Fund of the Minnesota Clean Water, Land, and Legacy Amendment
as part of the Statewide Survey of Historical and Archaeological Sites

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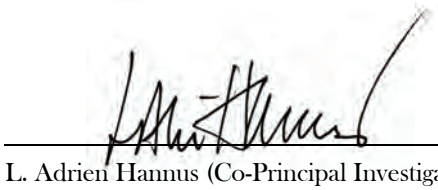

L. Adrien Hannus (Co-Principal Investigator)

December 2012

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Cover Image: View of the Red Lake River valley from just south of the Old Crossing Treaty Site near Huot.

ABSTRACT

This report presents the findings of an intensive archeological and geomorphological investigation of select lands in Red Lake County, Minnesota. The project, conducted by the Archeology Laboratory, Augustana College, Sioux Falls, South Dakota, is one of a series of studies undertaken as part of the Legacy Amendment-funded Statewide Survey of Historical and Archaeological Sites focused on the investigation of poorly understood regions and counties in the state. The primary objective of the study was to expand the breadth of collective knowledge concerning the location and character of archeological sites in Red Lake County. The current investigations surveyed 4,454 acres of land and documented 24 previously unrecorded archeological properties in the county. Nine previously recorded/reported sites were also revisited during the course of the study. Three local artifact collectors were also interviewed, and their respective artifact collections were documented. These individuals identified the location of several sites associated with their collections. The study was also augmented by a geomorphological investigation. The geomorphological component focused on the examination of three localities in river valley and beach ridge settings within the county and one additional locality just outside of the project area in Polk County. Examination of cutbank exposures and deep soil cores from these localities afforded a clearer view of regional alluvial and lacustrine landform development and resulted in the identification of multiple paleosols. Ten radiocarbon dates, obtained from the identified paleosols provide a detailed chronology for the development of the valley terraces and assist in the modeling of buried site potential within the study area. With respect to modeling, the survey results seem to validate the site locations predicted by MN/Model. It should be noted that the sampling strategy was not probabilistic and the selection of survey parcels was biased towards the maximization of site discovery. Nevertheless, 91 percent of prehistoric sites identified in the county are in areas of high and medium probability as predicted by MN/Model. Proximity to major waterways appears to be the primary factor in perceived site selection.

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FIGURE **PAGE**

ACKNOWLEDGEMENTS

There are many to whom we are indebted for help in the completion of this work. Though too numerous to list individually, our most sincere gratitude is extended to the multitude of landowners who granted us permission to conduct survey and testing on their property. We also wish to thank the City of Red Lake Falls in this regard. Without their assistance, this project would not have been possible. For allowing us access to their personal artifact collections, we thank Anne Healy, Ed Moran, and Al Buse. Additional thanks are extended to Anne for helping promote our project by way of local radio broadcast and newspaper article, and for providing a wealth of additional information concerning local contacts and the rich history of the county. Special thanks are also extended to Ed Moran for not only identifying the location of several sites in the county, but for spending the better part of multiple days actually taking us to them in person. For providing us with photographs of copper points from sites 21RLg and 21RLh, now in the collection of the Science Museum of Minnesota, we thank Ed Fleming. For assistance with the files search, we thank Tom Cinadr. At the Natural Resources Conservation Service (NRCS), we wish to thank Luther Newton, District Conservationist at the Red Lake Falls Field Office, for continually allowing us access to his office equipment. Extra special thanks are extended to NRCS Soil Scientist Heather Dose, who accompanied us for an entire week in the field while we conducted the geomorphological study. Her assistance in all respects was greatly appreciated. Thanks again, Heather. Additional thanks are directed towards Beth Hobbs, Minnesota Department of Transportation (MNDOT), who not only provided data for previous surveys in the county, but also generated a custom-made MN/Model county map for the project. Finally, we wish to acknowledge the efforts of Scott Anfinson, Pat Emerson, and Bruce Koenen, for administering the project and for providing advice and support (and photos) throughout. We sincerely appreciate your help. Thank you, one and all.

PROJECT OVERVIEW

On November 9, 2011, the Archeology Laboratory, Augustana College (ALAC), Sioux Falls, South Dakota, entered into a contract with the Minnesota Historical Society (MHS), St. Paul to conduct an archeological survey of Red Lake County, Minnesota. The study is one of a series undertaken since 2010 as part of the Legacy Amendment-funded Statewide Survey of Historical and Archaeological Sites (www.osa.admin.state.mn.us; see also Arzigian and Kolb 2011; Holley et al. 2011; Mulholland et al. 2011). These statewide survey projects have targeted areas of Minnesota that have previously received little attention archeologically. The aim of the investigations is to collect basic site locational inventory data that will assist in future cultural resource management (CRM) planning, archeological research, and public education.

Prior to this study, Red Lake County and the two associated archaeological subregions, 6n and 7w (Table 1; Figure 1), had received virtually no attention from the professional archeological community. Only eight archeological sites had been formally documented in the county before 2012, the majority of which were identified in the past 40 years as a result of a small number of CRM surveys. Only two of these sites, 21RL1 and 21RL2, have been the subject of professional excavations (Johnson 1961, 1973b; Wilford 1941). The few previous surveys were, for the most part, confined to narrow pipeline and roadway corridors. The current study represents the first large-scale, systematic archeological inventory survey to be undertaken in the county. The results of this investigation are reported herein.

DESCRIPTION AND OBJECTIVES

As detailed on page 3 of the project Request for Proposals (RFP), the objective of the investigation was "...to summarize what is known about the prehistoric past of Red Lake County, to update the State Archaeologist's site file with regard to the status of known sites, to find unrecorded sites, and to build a narrative predictive model of where prehistoric sites should be located" (see Appendix A). Three primary tasks comprised the project:

1) Assess what is known about the prehistoric human occupation of Red Lake County by reviewing site records and reports, examining institutional artifact collections, interviewing local artifact collectors, and reconstructing the paleoenvironment.

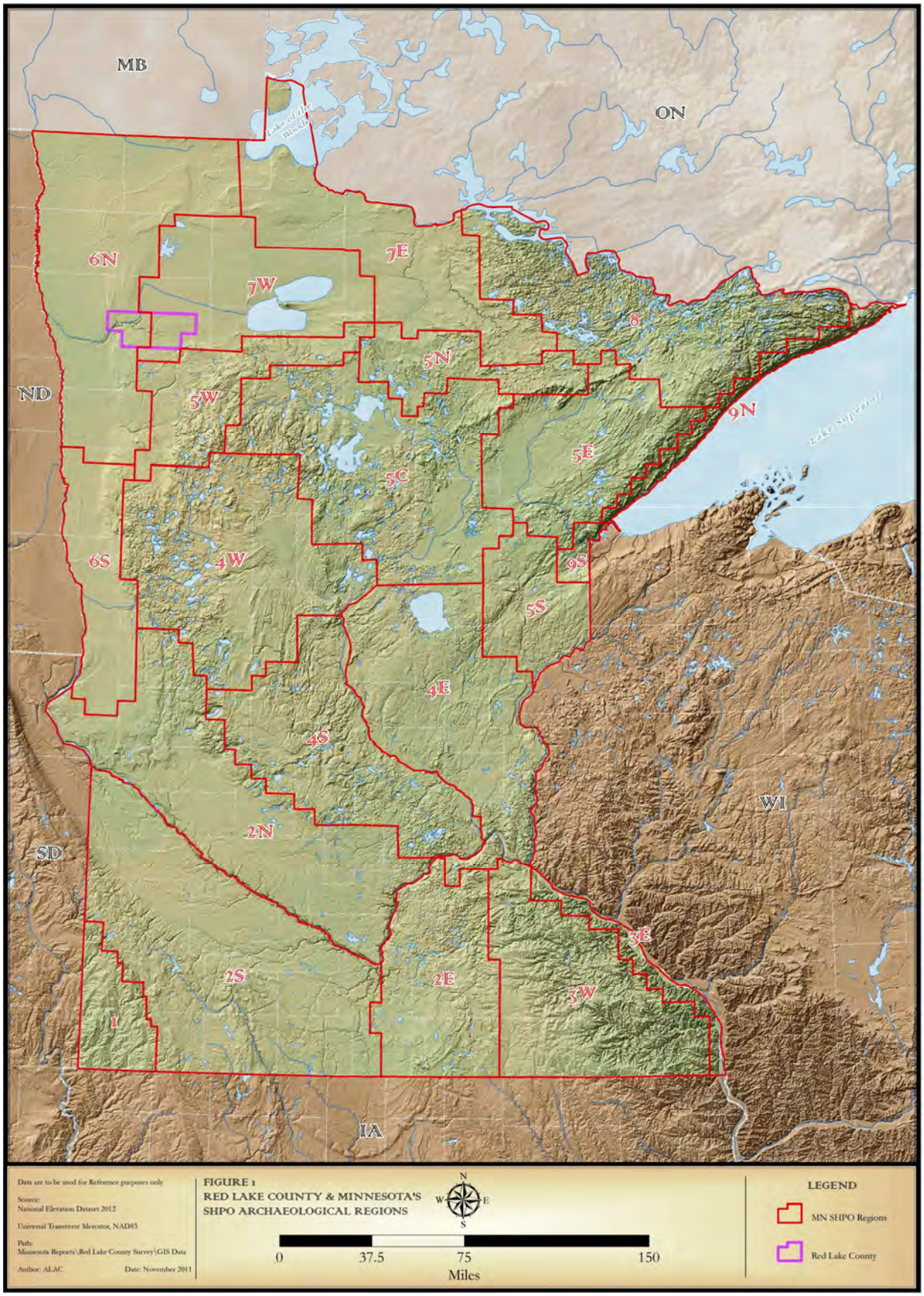
2) Conduct a field survey of previously recorded and reported (alpha) site areas in the county, as well as select localities identified in the research design that are felt to reflect a good sample of varying landform settings with high, medium, and low potential for harboring prehistoric archeological deposits.

3) Complete an analytical and descriptive report, a narrative site locational probability model for identifying prehistoric resources, and a short overview of the human prehistory of the county suitable for public distribution.

These tasks, outlined by the MHS on page 4 of the RFP, served as the foundation for the research design that was ultimately constructed.

Table 1. Archaeological Region Identification Key.

Southwest Riverine	**1**
Prairie Lake	**2**
Prairie Lake North	2N
Prairie Lake South	2S
Prairie Lake East	2E
Southeast Riverine	**3**
Southeast Riverine East	3E
Southeast Riverine West	3W
Central Lakes Deciduous	**4**
Central Lakes Deciduous South	4S
Central Lakes Deciduous East	4E
Central Lakes Deciduous West	4W
Central Lakes Coniferous	**5**
Central Lakes Coniferous North	5N
Central Lakes Coniferous South	5S
Central Lakes Coniferous East	5E
Central Lakes Coniferous Central	5C
Red River Valley	**6**
Red River Valley North	*6N*
Red River Valley South	6S
Northern Bog	**7**
Northern Bog East	7E
Northern Bog West	*7W*
Border Lakes	**8**
Lake Superior	**9**
Lake Superior North	9N
Lake Superior South	9S


MB
ON
ND
SD
WI
IA
Lake of the Woods
Lake Superior
6N
7W
7E
8
5N
5W
9N
5E
5C
6S
4W
9S
5S
4E
4S
2N
3E
2S
2E
3W
1
Data are to be used for Reference purposes only
Source:
National Elevation Dataset 2012
Universal Transverse Mercator, NAD83
Path:
Minnesota Reports\Red Lake County Survey\GIS Data
Author: ALAC
Date: November 2011
FIGURE 1
RED LAKE COUNTY & MINNESOTA'S
SHPO ARCHAEOLOGICAL REGIONS
N
W
E
S
0
37.5
75
150
Miles
LEGEND
MN SHPO Regions
Red Lake County

Research Design

A research orientation was established and field methodology was implemented pursuant to the specifications set forth in the RFP, as well as to governing state (Anfinson 2005) and federal (Advisory Council on Historic Preservation [ACHP] 2012) standards for the management and protection of cultural resources. The RFP states that the first task of the project is to assess what is known about the prehistoric human occupation of Red Lake County through a review of site records and reports, through an examination of institutional and private artifact collections, through interviews with local artifact collectors, and through a reconstruction of the regional paleoenvironment. The desired outcome of this assessment is the recognition of potential trends or patterns in prehistoric site composition and distribution within the county, as well as within the two archaeological regions associated with Red Lake County. Any perceived patterns would be compared with trends observed among other prehistoric sites from the Plains, Upper Midwest, and Great Lakes areas, as well as with those identified in previously constructed site locational models, such as Minnesota's MN/Model (Hudak et al. 2002).

Site records and reports were reviewed at the Minnesota Office of the State Archaeologist (OSA), Ft. Snelling History Center, and the MHS State Historic Preservation Office (SHPO), St. Paul on February 6-7, 2012 by ALAC personnel. Archived records from the University of Minnesota, Twin Cities (U-of-M), MHS, and the Institute for Minnesota Archaeology (IMA), now curated at the OSA, were also consulted, as were resources available at ALAC and the Center for Western Studies (CWS), Augustana College, Sioux Falls, South Dakota. A 2005 Red Lake County Soil Survey (Bednarek et al. 2005) was obtained from the Natural Resources Conservation Service (NRCS) office in Thief River Falls, and sources held at the Red Lake County Historical Society, Red Lake Falls, were also consulted.

Three private artifact collections were examined and limited interviews were conducted with the owners of these collections, as well as with other local residents knowledgeable about the history and prehistory of the county. Every effort was made to follow-up on viable leads; however, because of time and travel constraints, emphasis was directed towards collections with a known or likely provenience within the county. Although scheduling conflicts did not allow for the examination of two Red Lake County artifacts curated at the Science Museum of Minnesota, photographs of the specimens were obtained for inclusion in the report. Chapter 5 provides a detailed account of these collections.

The second task outlined in the RFP is a county-wide field investigation. Areas targeted for pedestrian survey included those containing previously recorded sites and alpha[1] sites, as well as select localities felt to reflect a good sample of varying landform settings with high, medium, and low potential for harboring prehistoric archeological deposits. The selection of survey areas was based on several factors, including previously documented site locations, a review of soils and topographic maps, landowner permission, landform composition, and the presence of crops in the field at the time of the survey. Ultimately, although the survey area selection intentionally incorporated both probabilistic and non-probabilistic methodology similar to that employed during the MN/Model investigations and the Statewide Archaeological Survey (MHS 1981), the majority of parcels were selected to maximize site discovery.

The geomorphic component, conducted over the course of one 5-day and one 3-day session, involved mapping surfaces and landforms and describing and sampling of sections of alluvial fills in stream valley and relict beach ridge settings. An effort was made to locate natural exposures of late Pleistocene and Holocene alluvium in stream banks; however, a lack of sufficiently deep exposures along one series of terraces necessitated the use of a Giddings soil probe to augment the process. Ten radiocarbon dates were obtained from paleosols at four different localities as part of this component.

The current investigation culminated in the survey of 4,454 acres of land and the identification and documentation of 24 previously unrecorded archeological properties in the county (Figure 2). In addition, nine previously recorded/reported sites were revisited during the course of the study. No archeological evidence was relocated at one previously recorded site area and three of the alpha site areas that were investigated.

The final task outlined in the RFP is the compilation of a comprehensive investigation report detailing the findings of the study, a narrative site locational model, and recommendations for future research. The framework and

[1] *Alpha* designations are assigned to those sites that are based on correspondence or written accounts but that have not been field-verified by a professional archeologist. Examples of this include sites reported to the SHPO or OSA by landowners or those mentioned in historic accounts.

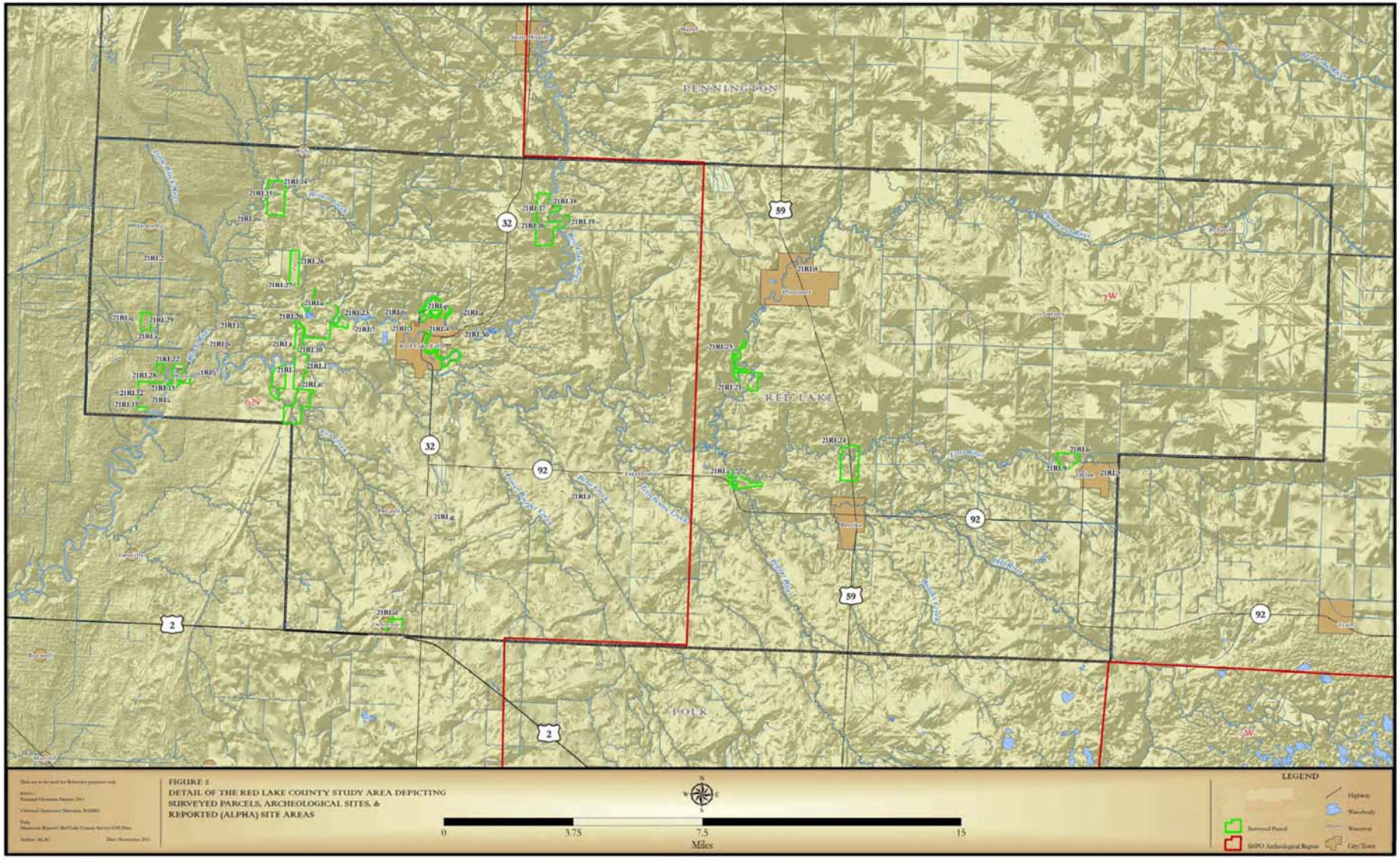


FIGURE 2
DETAIL OF THE RED LAKE COUNTY STUDY AREA DEPICTING SURVEYED PARCELS, ARCHEOLOGICAL SITES, & REPORTED (ALPHA) SITE AREAS

components of this report are outlined below. An additional component of the final task, the development of a short overview of the human prehistory of the county suitable for public dissemination, was compiled as a separate document and appended to this report (see Appendix D).

PERSONNEL AND PROJECT ORIENTATION

The project was conducted under the overall supervision of L. Adrien Hannus and Austin A. Buhta. The geomorphological component of the project was conducted by Rolfe D. Mandel. GIS data management and map production was conducted by Buhta and Jason M. Kruse. Buhta also assisted with the archeological and geomorphological field investigations, and conducted background research, model development, and report writing. Artifact collection documentation was undertaken by Hannus and Buhta. Kruse served as field director for the archeological survey component. Additional archeological field crew members included Edward J. Lueck, Amy H. Godsell, Robert Ruf, and Creighton Gerber. Linda Palmer assisted with report writing and Lynette Rossum administered the project.

REPORT FRAMEWORK AND ORGANIZATION

Eight chapters and the appended data comprise the report of this investigation. A brief synopsis of each chapter, followed by a list of appendices, is provided below.

Report Chapters

1) **Project Overview** presents a general study overview, including the research objectives of the investigation, a description of the project area, project methodology and roles of personnel involved, and an outline of the framework and organization of the report.

2) **Environmental Context** provides a general overview of the environmental parameters comprising Red Lake County and the two archaeological subregions in which it is located. Topics addressed include the geology, landscape composition and topography, regional climate and ecology, the significance of glacial processes in the region, and the role of these processes in paleoenvironmental change.

3) **Cultural Context** details the culture history of the study region. Overviews are provided of the various cultural groups known to have inhabited the region through time, beginning with Paleoindian cultures and concluding with late precontact habitation. Background concerning the historic-period settlement of Red Lake County is not presented because the focus of the project is directed towards the *pre*historic occupation of the area.

4) **Background Research** identifies the previous archeological research conducted in the study area and the breadth of available reports and additional literature produced as a result of these investigations. Also examined are sources detailing work from outside the current study area but within the larger extent of the two pertinent archaeological regions.

5) **Collections Documentation and Field Investigations** details the results of the archeological pedestrian survey conducted during the study as well as the documentation of three private artifact collections identified in Red Lake County. Descriptions of surveyed parcels, individual archeological sites, and the artifacts are presented. Documentation for each site includes artifact and material type inventories and analysis, as well as photographs and map data.

6) **Geomorphological Context** provides a geomorphological assessment of the Red Lake County study area. Included are the results of examined and profiled cutbank exposures and deep soil cores as well as a discussion of the radiocarbon chronology and river valley terrace development sequence in the county. A preliminary inventory of landforms capable of housing intact deposits of prehistoric age is presented (Rolfe D. Mandel).

7) **Synthesis and Recommendations** presents a discussion of the project research and evaluates the results and avenues available for further exploration. Data from the archeological and geomorphological studies are amalgamated and the state of prehistoric archeology in Red Lake County is reevaluated based on these findings and within the context of a narrative site predictive model. The model utilizes the results of previous investigations and other generated datasets to identify prehistoric site location potential for given landform settings within the county.

8) **References Cited** provides a comprehensive list of sources cited in the report.

Appendices

A) Request for Proposal: Investigating Poorly Known Areas of Minnesota – An Archeological Survey of Red Lake County

B) Archeological Site Forms

C) Radiocarbon Data

D) An Overview of the Human Prehistory of Red Lake County & Northwestern Minnesota

ENVIRONMENTAL CONTEXT

This chapter presents a general description of the environmental setting of the Red Lake County study area. The physiography and geology of Red Lake County are addressed first. This is followed by a description of lithic resources in northwestern Minnesota and a brief overview of soils. Next, the hydrography and modern climate of the study area are described, followed by a summary of the region's ecosystems and late-Quaternary paleoenvironments. The chapter concludes with an overview of the two archaeological subregions comprising the study area in an attempt to establish a more viable context within which the cultural resources may be evaluated.

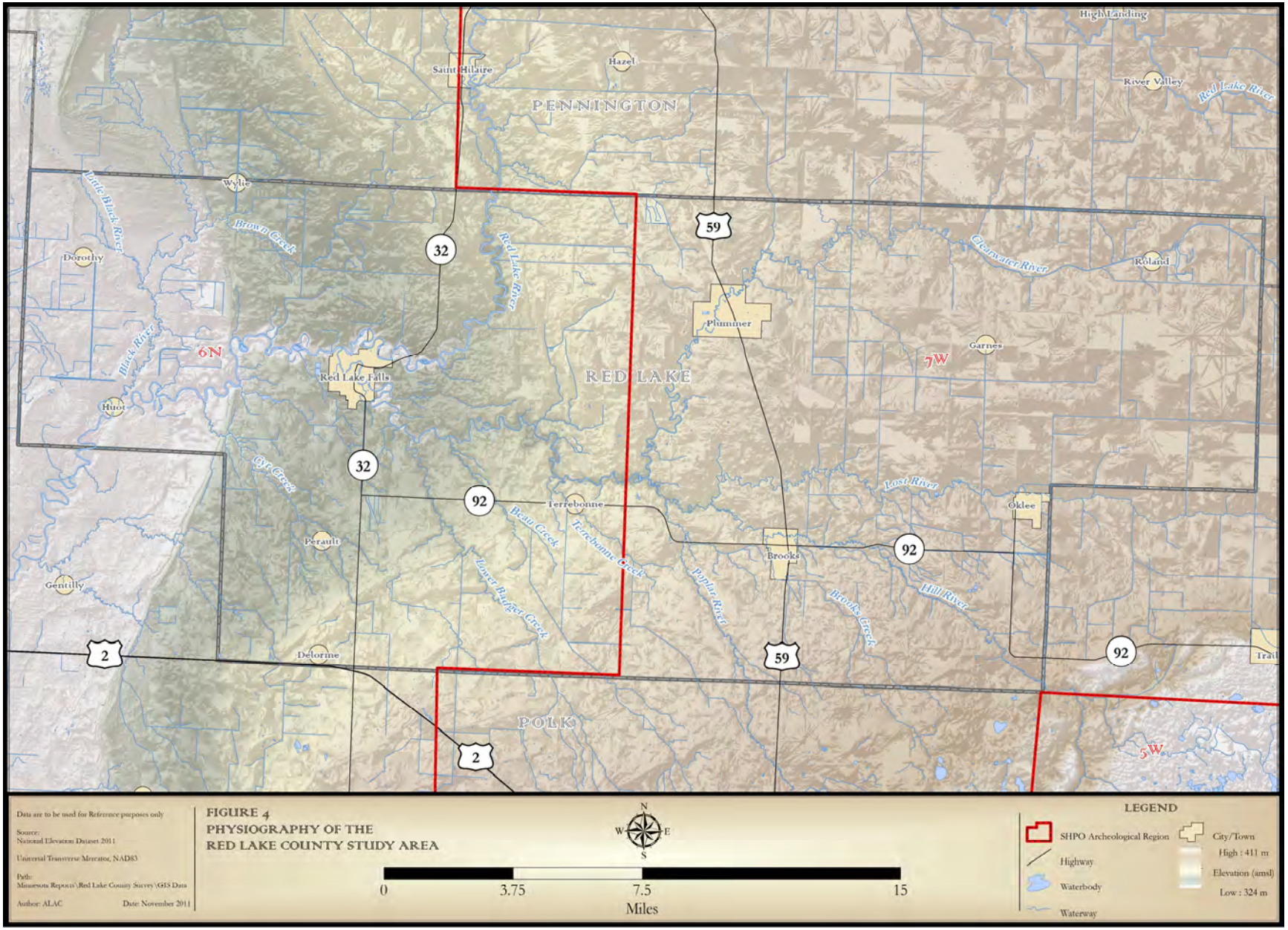
LANDSCAPE COMPOSITION

Physiography and Geology

Red Lake County covers an area of 432 square miles, or 277,000 acres, in northwestern Minnesota (Bednarek et al. 2005:1) (see Figure 1). It is situated within the Western Lake section of the Central Lowland physiographic province (Fenneman 1946). With the exception of some of the major river valleys and relict glacial lake beach ridges, the county is flat and featureless (Figure 3). Elevations in the county are low, mostly ranging between 1,000 and 1,100 feet above mean sea level (amsl). The highest elevations are in the easternmost portions of the county and they slowly decrease westward toward the valley of the Red River of the North (Figure 4). The highest point in the county, located in the very southeastern corner, is 1,185 feet amsl. The lowest point in the county, along its westernmost edge, is 975 feet amsl (Bednarek et al. 2005:3).

Figure 3. View of the flat, expansive landscape setting that typifies the Red Lake County study area, northwestern orientation.

The landscape of Red Lake County is relatively young and is a product of late and terminal Pleistocene glacial advances and retreats. The most recent North American glacial event, known as the Wisconsin Episode, occurred between approximately 110,000 and 10,000 years ago and radically altered nearly all of the landscape that is now the state of Minnesota. During the Wisconsin, massive glaciers comprising the Laurentide ice sheet formed in Canada and slowly advanced southward into the low-lying Interior Plains of the United States (Trimble 1980:5). By approximately 21,000 years ago, a time that geologists refer to as the last glacial maximum (LGM), the massive ice sheet had advanced


High Landing
Saint Hilaire
Hazel
River Valley
Red Lake River
PENNINGTON
Wylie
Little Black River
Brown Creek
Dorothy
32
Red Lake River
59
Clearwater River
Roland
Plummer
Garnes
6N
7W
Black River
Red Lake Falls
RED LAKE
Huot
32
Cyr Creek
92
Terrebonne
Lost River
Oklee
Beau Creek
Terrebonne Creek
Perault
Brooks
92
Poplar River
Hill River
Gentilly
Lower Badger Creek
Brooks Creek
2
Delorme
59
92
POLK
2
5W
Data are to be used for Reference purposes only
Source:
National Elevation Dataset 2011
Universal Transverse Mercator, NAD83
Path:
Minnesota Reports\Red Lake County Survey\GIS Data
Author: ALAC
Date: November 2011
FIGURE 4
PHYSIOGRAPHY OF THE
RED LAKE COUNTY STUDY AREA
N
W
E
S
0
3.75
7.5
15
Miles
LEGEND
SHPO Archeological Region
Highway
Waterbody
Waterway
City/Town
High : 411 m
Elevation (amsl)
Low : 324 m

southward to such an extent that it covered the majority of land between the Missouri and Ohio rivers (Trimble 1980:5). During the LGM, the Laurentide ice sheet covered all but the extreme southwestern and southeastern corners of Minnesota. As the ice sheet advanced, it scoured and smoothed the land, collecting boulders and smaller rocks and dragged them southward.

Following the LGM, around 18,000 years ago, a general period of extended warming ensued during which the Laurentide ice sheet began the slow process of melting and retreating northward. As the glaciers wasted, the rocks, sand, and finer material that had previously been collected were dispersed across the landscape in unsorted amalgamations such as moraines and vast till plains (Bednarek et al. 2005:2; Tester 1995). In northwestern Minnesota, these deposits of glacial drift are about 100 to 400 feet thick (Albert 1995).

In Red Lake County, the glacial drift has been subdivided into two lithostratigraphic units: the Huot Formation and the Red Lake Falls Formation (Harris 1987). The Huot Formation occurs in western Red Lake County and consists of clay-rich glacial till with small amounts of gravel. In places, the clayey deposits also contain cobbles and boulders that were deposited around 13,000 years ago by a south-flowing glacier. The Huot Formation is typically 2 to 15 feet thick, but it is as much as 70 feet thick in some areas.

The Red Lake Falls Formation occurs in central and eastern Red Lake County and mostly consists of silty till deposited about 13,500 years ago by a south-flowing glacier. This formation contains more sand and less clay than that of the Huot Formation; inclusions of sand and gravel are common. In some places the till is interbedded with lacustrine and alluvial deposits. The thickness of the Red Lake Falls Formation typically is 15 to 30 feet, but it is as thin as 7 feet in some areas and as thick as 70 feet in others.

Many of the numerous moraines and other glacial deposits served as dams that blocked off major drainage outlets south of the retreating Laurentide ice sheet and, from the meltwaters of the ice sheet, the formation of several proglacial lakes began in Minnesota (Ojakangas and Matsch 2004). Largest among these proglacial lakes was Glacial Lake Agassiz. By approximately 13,000 years ago, the lake had grown to such an extent that it covered all of northwestern Minnesota, including Red Lake County. Agassiz was the largest lake in the history of North America. At its greatest extent, it covered a vast area that included portions of North Dakota, South Dakota, Minnesota, Manitoba, Ontario, and Saskatchewan (Waters 1977). While Agassiz inundated the study area, wind-powered wave action deposited lacustrine sediments atop the glacial till. In the western portion of the county, which harbored the calmer, interbeach areas, finer silts and sands were deposited (Bednarek et al. 2005:3). Deposits of coarser-grained sediment are found across much of the eastern portion of the county, as well as along the beach ridges that formed the margins of the lake. Lacustrine sediments are much thinner in the eastern part of the county, and the till deposits are at or near the surface in many of these areas (Harris 1987; Sims and Morey 1972).

Eventually, the moraine dams were breached and Agassiz drained in multiple, large-scale events. The lake fell in stages, which is evidenced by the presence of numerous parallel, linear beaches of sand and gravel deposited in portions of the study area. Five sets of ridges were initially identified and studied by geologist Warren Upham. He attributed the presence of these ridges to the stabilization of the Agassiz shoreline following successive draining events (Upham 1895). Upham named the beach ridges, in order of earliest to most recent, Herman, Norcross, Tintah, Campbell, and McCauleyville, respectively. A recent series of optically stimulated luminescence (OSL) dates obtained from Agassiz strandlines near Fargo have provided a provisional calibrated (INTCAL09, Reimer et al. 2009) age of 14,000 ± 300 cal. B.P. for the Herman Beach and an age range from 10,600-10,300 cal. B.P. for the Campbell Beach (Lepper et al. 2011:1206). Strandlines associated with the Campbell Beach are present in the western part of Red Lake County and a small, separate area of beach deposits, associated with the older Herman Phase, are present in the county's southeastern corner.

Lithic Resources

The availability of lithic raw material resources was crucial to Minnesota's prehistoric inhabitants. The tools manufactured from these materials allowed population groups to successfully hunt game, process foods and hides, construct dwellings, and accomplish many other daily activities. Certain lithic material types are more suitable than

others for flintknapping, and the prevalence and distribution of these material types in a given geographic area almost certainly played a role in the travel, settlement, and activity patterns of the state's prehistoric cultural groups.

In an attempt to more clearly understand the dynamics of lithic resource availability and utilization in prehistoric Minnesota, Bakken (1997) developed a model whereby groups of lithic resources were segregated into different regions throughout the state. This model was recently revised and refined to include additional regions, to more clearly delimit the boundaries of these regions, and to introduce the concept of subregions (Bakken 2011:63-68). The revised model places all of Red Lake County within the Tamarack Subregion of the South Agassiz Resource Region (Bakken 2011:73-77). The Tamarack Subregion is described as being dominated by glacial sediments associated with the Des Moines lobe. There are no bedrock outcrops in the portion of the subregion containing Red Lake County; however, the series of Glacial Lake Agassiz beach ridges that occur in the county would have provided an accessible source of potential toolstone material (Bakken 2011:73).

The primary lithic raw materials in the subregion are Swan River and Red River chert. Swan River chert is more prolific and the cobbles are available in a larger variety of sizes than those of Red River chert (Bakken 2011:77). Secondary raw materials present in the subregion include quartz and Lake of the Woods rhyolite. Pebbles and small cobbles of quartz are widely distributed across the region; however, the distribution of Lake of the Woods rhyolite is not well-understood. It is posited that this material may be more abundant east of the current study area (Bakken 2011:77). Other material types present throughout the subregion include small pieces of unidentified jaspers, cherts, and silicified wood. Tongue River silica is notably absent from the subregion. In terms of exotic materials, Knife River flint has been documented at several different sites in the subregion. Obsidian had been documented among site assemblages in the subregion to a far lesser extent than Knife River flint (Bakken 2011:77).

Pedology

In Red Lake County, most soils are formed in one of four parent materials: loamy, calcareous till deposited during the Wisconsin glacial episode, clayey and silty lacustrine deposits that aggraded on the floor of Glacial Lake Agassiz, sandy and gravelly deposits that accumulated on the beach ridges of Lake Agassiz, and fine- and coarse-grained alluvium that accumulated during the terminal Pleistocene and the Holocene. Some of the sandy deposits on the beach ridges have been reworked by wind; hence, there are localized occurrences of soils developed in æolian sediment. Also, a few soils are developed in peat deposits in the extreme eastern portion of Red Lake County.

It is beyond the scope of this report to describe all the soils in Red Lake County. Instead, the reader is directed to the U.S. Department of Agriculture's *Soil Survey of Red Lake County, Minnesota* (Bednarek et al. 2005). A detailed description of surface and buried soils that are relevant to understanding the archeological record of Red Lake County is presented in Chapter 6 of this report.

Hydrography

Red Lake County is located within the Red Lake River watershed. The Red Lake River watershed, which is part of the larger Red River of the North basin, occupies an area of 5,990 square miles in northwestern Minnesota. It includes all of Red Lake County and portions of nine other counties in the region (Red Lake Watershed District 2012). The Red Lake River watershed is further segregated into five subwatersheds, two of which, the Red Lake River and Clearwater River subwatersheds, comprise the current study area.

The primary waterways responsible for draining the study area's two subwatersheds are the Red Lake River and the Clearwater River. The Red Lake River (Figure 5), which originates at the outlet of Lower Red Lake, flows approximately 196 miles to its confluence with the Red River of the North at East Grand Forks. The Red Lake River subwatershed drains an area of 909,024 acres and includes a total of 1,504 stream miles within portions of six different counties (Hanson 2010:6). The Clearwater River (Figure 6), a tributary of the Red Lake River, flows approximately 91 miles from its source at Greer Lake in Mahnomen County to its confluence with the Red Lake River at Red Lake Falls (U.S. Army Corps of Engineers 1991). The Clearwater River subwatershed drains an area of 886,632 acres and includes a total of 1,916 stream miles within portions of six different counties (Hanson 2010:6). Named tributaries within the Red Lake River watershed include the Black River, the Little Black River, Brown's Creek, and

Cyr Creek. Named tributaries within the Clearwater River watershed include the Lost River, the Poplar River, the Hill River, Lower Badger Creek, Beau Creek, Brooks Creek, and Terrebonne Creek (Bednarek et al. 2005:3).

Figure 5. View of the Red Lake River in the town of Red Lake Falls, west-northwestern orientation.

Figure 6. View of the Clearwater River south of the town of Plummer, southern orientation.

The Red Lake River watershed is a dendritic drainage network with flow patterns generally trending towards the west in the direction of the Red River of the North; however, the Black River and the Little Black River are largely south-flowing streams, and the Cyr, Lower Badger, Beau, Terrebonne, and Brooks creeks and the Poplar and Hill rivers flow in a northwesterly pattern. Overall, the drainage system in the study area is poorly developed, with extensive stream meandering and regular flooding characteristic of the region's level, low-lying topography. Although the majority of the streams consist of narrow channels with vegetated banks (see Figure 6), there are several areas along the major rivers where expansive stretches of high, steep cutbanks occur (see Figure 5).

With only one exception, Red Lake County is entirely devoid of natural lakes. The one exception is Huot Slough, a small oxbow lake located along the Red Lake River in the easternmost part of the county. The approximately 23-acre lake formed as one of several meander cutoffs along the course of the Red Lake River (Minnesota Conservation Department 1968:353).

It is likely that springs contribute groundwater to streams. However, an inventory of natural springs in northwestern Minnesota has not been completed, so the significance of these water sources in the study area is unknown (Robert G. Tipping, Hydrogeologist, Minnesota Geological Survey, personal communication 2012). The geology of the county is unsuitable for artesian springs; however, springs may occur in certain areas where glacial till is mantled by thick deposits of sand and gravel. Seeps typically have low flow rates and are active only intermittently during the spring and summer.

CLIMATE

The climate of northwestern Minnesota has changed dramatically in the past 20,000 years, transforming from one that supported continental glaciation to one that is now substantially warmer and more seasonal. The study area is within Thornthwaite's (1948) C_1 dry subhumid climatic zone with a 0 to -20 moisture index. Also, all of Minnesota has a continental climate characterized by a large annual temperature range. Winters are typically long and cold, and the ground oftentimes remains frozen to depths of between 3 and 5 feet for 6 months or more. Red Lake County's average winter temperature is 6° F with an average daily minimum temperature of -4° F. The county's average summer temperature is 66° F and the average daily maximum temperature is 78° F (Bednarek et al. 2005:3, 12).

The average annual precipitation in Red Lake County is approximately 23 inches. Most of the precipitation occurs between the months of March and October in the form of rain. The average total annual snowfall is approximately 49 inches at Red Lake Falls and approximately 37 inches at Oklee (Bednarek et al. 2005:3).

Weather extremes are relatively common throughout northwestern Minnesota, including the study area proper. Thunderstorms are fairly common spring and summer occurrences, and tornadoes and severe thunderstorms occur occasionally during these seasons as well. Blizzards are not uncommon during the winter months and hailstorms and drought have also been known to occur during the warmer months of the year (National Climatic Data Center 2012).

ECOSYSTEMS AND LATE QUATERANRY PALEOENVIRONMENTS

The Red Lake County study area is located within the *Lake Agassiz Plain* Level III Ecoregion as defined by the U.S. Environmental Protection Agency (USEPA) (2007) and the U.S. Geological Survey (USGS) (2006). The USGS (2006) briefly describes the character of the Lake Agassiz Plain Level III Ecoregion as follows:

> Glacial Lake Agassiz was the last in a series of proglacial lakes to fill the Red River Valley since the beginning of the Pleistocene. The Lake Agassiz Plain is composed of thick lacustrine sediments underlain by glacial till. It is extremely flat and has fewer lakes and pothole wetlands than neighboring ecoregions. The historic tallgrass prairie has been replaced by intensive agriculture. The preferred crops in the northern half of the region are potatoes, beans and wheat; soybeans and corn predominate in the south. Sugar beets are grown throughout the region [USGS 2006].

The Lake Agassiz Plain Ecoregion is further subdivided into three smaller, Level IV Ecoregions within Minnesota. Red Lake County is located within two of these three Level IV Ecoregions, the *Beach Ridges and Sand Deltas* Ecoregion and the *Lake Agassiz Plains* Ecoregion (USEPA 2007). These Ecoregions are briefly described in Table 2.

Table 2. Study Area Level III and Level IV Ecoregions.

Level III Ecoregion	Level IV Ecoregion	Level IV Ecoregion Description
Lake Agassiz Plain	Beach Ridges and Sand Deltas	The varying relief of the Beach Ridges and Sand Deltas Ecoregion interrupts the extremely flat and intensively farmed land of the Lake Agassiz Plain [Level III Ecoregion]. The beach ridges appear as parallel lines of sand and gravel formed by wave action on the varying shoreline levels of glacial Lake Agassiz. Three sand deltas, the largest being the Sheyenne River delta in the south, occur where major rivers entered glacial Lake Agassiz and dropped their sediment load. A high erosion risk exists in the sand dunes area [USGS 2006].
	Lake Agassiz Plains	Flat land higher than the *Glacial Lake Agassiz Basin* Level IV Ecoregion with row crops, small grains, and pasture [USEPA 2007].

Roughly the western half of the county falls within the Beach Ridges and Sand Deltas Level IV Ecoregion; the eastern half lies within the Lake Agassiz Plains Level IV Ecoregion.

Pre-settlement Flora and Fauna

The settlement of Red Lake County in the latter half of the nineteenth century initiated a process that dramatically altered the composition of floral and faunal resources in the area. The introduction of livestock and non-native grasses, incessant hunting practices, and conversion of land for crop production all played a role in this process. When the first Euroamerican settlers entered the study area, the western half of the county was tallgrass prairie with dominant communities consisting of big bluestem, little bluestem, Indiangrass, switchgrass, prairie dropseed, porcupine grass, needlegrass, sideoats grama, and a variety of other forbs (Brown 1985:30-44; Johnson and Larson 1999:9-10; Tester 1995:24). An oak-aspen riparian canopy dominated by Bur Oak, Pin Oak, and Quaking Aspen occurred along the Red Lake River and its tributaries throughout the study area (Tester 1995:24). A variety of small swamps were located along the back-sides of the beach ridges, and a small zone of brush prairie was located in the central and north-central parts of the county. Around the small marshes, communities of prairie cordgrass, bluejoint, northern reed grass, and sedges, cattails, and bulrush were prevalent (Brown 1985:36; Tester 1995:137). Tallgrass prairie and aspen parkland dominated the very eastern part of the study area, with a small number of peat bogs interspersed throughout this area and the northeastern corner of the county as well. The plant community within the southeastern corner of the county was mostly an aspen-oak parkland (Tester 1995:24).

The Red Lake County study area is situated in a unique ecotonal position in which the eastern deciduous forests transitioned into the tallgrass prairies to the west. This means that, prior to Euroamerican settlement, the study area harbored a vast array of habitats capable of supporting a diverse population of animals. The predominant prairie fauna present in the study area were bison, and vast herds roamed the valley of the Red River of the North prior to Euroamerican settlement. Other prairie game animals included elk, prairie chicken, and to a lesser extent, white-tailed deer, moose, and woodland caribou. A variety of fish and mussels occupied the larger waterways and migratory waterfowl would have been seasonally abundant around the small marshes in the study area (Anfinson 1990:149). Within the parkland and more heavily wooded areas in the eastern part of the county, the primary game animal prior to Euroamerican settlement was the white-tailed deer. Other inhabitants of this area included moose, woodland caribou, black bear, and beaver. Fish, mussels, and waterfowl were present in this portion of the county as well (Anfinson 1990:149).

It is likely that the regional floral and faunal communities present at the time of Euroamerican settlement had been in place since about 5,000 years ago, when, climatically, the region began to more closely mirror that of today's seasonal regimes (Knox 1983:32). Prior to that time, the composition of the vegetation was markedly different. Pollen and plant macrofossil data from several sites in western and southern Minnesota indicate that the region was largely a boreal spruce forest during the retreat of the Wisconsin ice sheet. The spruce forests then transitioned into a deciduous forest

parkland as temperatures increased through the early Holocene. The deciduous forests and parklands gradually transitioned into an increasingly prairie-like environment into the mid-Holocene (Wright 1970:158).

Pollen and plant macrofossil data obtained from Thompson Pond (McAndrews 1966) and Qually Pond (Shay 1965, 1967), south of the study area, reflect this general pattern of warming and concomitant environmental transition. Data indicate that the spruce forests dominated at Thompson Pond by 11,000 years ago and were prevalent at Qually Pond around this time as well (Wright 1970:158). Studies in northeastern Minnesota suggest the presence of a narrow belt of tundra bordering the receding ice sheets from 11,500 to 10,500 years ago (Watts 1967), so it is possible that such an environment briefly dominated the study area as well following recession of the glaciers. Although evidence is generally poor, the transition from spruce forests to deciduous parkland environments at Qually and Thompson ponds was hypothesized to have begun around 10,000 years ago.

Evidence from throughout the eastern Plains suggests a gradual warming and drying trend from about 9,000 to 5,000 years ago (Baker et al. 2006), a period known as the Altithermal climatic interval. This would have resulted in a gradual expansion of the prairie east into the study area and a reduction in the deciduous forest and parkland environment.

Following the Altithermal, temperatures began to cool and the climate became more mesic and seasonal. This would have allowed for a reintroduction of deciduous species from the east, further onto the prairie, creating a parkland-type environment in the more easterly portions of the study area. The onset of this cooler and wetter climatic regime ultimately resulted in the development of numerous small marshes and peat bogs in and around Red Lake County, particularly further to the east. Radiocarbon dates place the onset of peatland formation in northern Minnesota at around 4300 RCYBP (Wright and Glaser 1983:376); however, this process began further to the east and followed a westward, time-transgressive pattern. Dates from the more westerly portions of the Red Lake Peatlands, which is where the study area is located, suggest that the onset of peat formation did not begin until approximately 1950 ± 65 RCYBP (Glaser et al. 1981:577). Approximately six percent of Red Lake County, some 17,000 acres, is now covered by shallow peat deposits (Soper 1919:209).

ARCHAEOLOGICAL REGIONS

Red Lake County is bisected north-to-south by Archaeological Regions 6 and 7. The northern subregion of Region 6, the *Red River Valley*, incorporates the western half of Red Lake County. The western subregion of Region 7, the *Northern Bog*, encompasses the eastern half of the county. General geographic and environmental descriptions of these regions, based on those originally developed by Anfinson (1990), are supplied below. A discussion of these regions in terms of known and predicted prehistoric site distribution is provided in Chapter 4.

Sub-Region 6N: Red River Valley North

The Red River Valley Archaeological Region covers a substantial portion of northwestern Minnesota. All of Kittson, Norman, and Wilkin counties are located within this region, as are portions of Clay, Grant, Marshall, Pennington, Polk, Red Lake, Roseau, Stevens, and Traverse counties (see Figure 1). The region is located within the low, flat plain formed by Glacial Lake Agassiz. The Campbell and Herman beach ridges mark the eastern boundary of the region. The region's western boundary extends into eastern North Dakota and its northern boundary extends into southeastern Manitoba (Anfinson 1990:149).

Topographically, the only relief of note is along the beach ridges in the eastern portion of the region. No bedrock outcrops occur, although lithic cobbles comprise some of the beach ridge deposits in the east. The region is devoid of natural lakes; however, numerous small marshes were present at the time of Euroamerican settlement, and many of those were likely lakes in late prehistoric times (Anfinson and Peterson 1988:301). These marshes probably formed by 4,000 years ago when paleoclimatic evidence indicates a cooler, more mesic regime compared to that of the mid-Holocene (Anfinson 1990:150). Deglaciation models (see Dyke et al. 2003) suggest that the entire region was glaciated at 12,500 RCYBP (ca. 14,200-15,050 cal B.P.) and that all but the easternmost portion was beneath Glacial Lake Agassiz at 11,000 RCYBP (ca. 12,700-13,000 cal B.P.). Between 10,500 and 10,250 RCYBP (ca. 12,550-11,950 cal B.P.), Lake Agassiz had retreated to the northwestern corner of the region; however, by 10,000 RCYBP (ca. 11,300-

11,600 cal B.P.), it had again advanced to cover all but the easternmost portion of the region. By about 9000 RCYBP, it fully abandoned the area.

Sub-Region 7W: Northern Bog West

The Northern Bog Archaeological Region is located in north-central Minnesota. It contains all of Lake of the Woods County and portions of Beltrami, Clearwater, Koochiching, Itasca, Marshall, Pennington, Polk, Red Lake, Roseau, and St. Louis counties (see Figure 1). The region comprises what, at one time, was the long, eastern arm of Glacial Lake Agassiz known as the Beltrami arm. The Northern Bog Archaeological Region is bounded to the west by Region 6, to the south by Region 5, and to the east by Region 8; it extends north to the Canadian border (Anfinson 1990:149).

Because the region is almost entirely an old lake plain, the topography is predominantly flat, although a series of poorly defined beach ridges occur in some areas. There is very little lake development in the region, and the central area is wholly devoid of natural lakes. Only a few large, shallow remnants of Lake Agassiz (Lake of the Woods, Mud Lake, Red Lake, and Thief Lake) remain in the region; however, these are all located east of the study area. The eastern two-thirds of the region consists of peatland, and the less peaty prairie soils are only present further to the west. The study area is included in the western portion of the Northern Bog Region that primarily contains the prairie soils. However, peat deposits *are* present in the eastern half of Red Lake County. Based on previous radiocarbon dates, these deposits began to form in the area at around 2,000 years ago (Glaser et al. 1981:577). The implication for the archeological record is that sites predating 2,000 years ago will be buried beneath the peat deposits. Bedrock outcrops occur near the Rainy River and Lake of the Woods, and in eastern Koochiching County, but glacial drift and lacustrine deposits cover the rest of the region, including the study area (Anfinson and Peterson 1988:304). Deglaciation models (Dyke et al. 2003) indicate that the vast majority of this region was beneath either the ice sheets or Lake Agassiz at 11,500 RCYBP (ca. 13,250-13,450 cal B.P.) and that the northernmost portion of the region was beneath the lake at 11,000 RCYBP (ca. 12,700-13,000 cal B.P.).

PRECONTACT CULTURAL CONTEXT

The prehistoric cultural chronological framework, both within the study area proper and within its broader archaeological regions, is poorly understood. This is largely the result of the paucity of research initiatives and CRM projects conducted in the area to-date; however, other factors may also be at play. What evidence does exist from the study area and from Archaeological Regions 6 and 7 suggests a continuing cultural presence on the landscape from at least Late Paleoindian times up to the present-day. Although the principal focus of this study centers around precontact culture groups (ca. 12,000-300 RCYBP), it should be noted that Red Lake County also has a particularly rich and interesting historical background. Those interested in a more detailed account of the post-European contact history of the county should reference *A History of Red Lake County: Red Lake County, Minnesota* (Healy and Kankel 1976) and *Centennial History of Polk County* (McCall 1961).

As a means of facilitating the evaluation and interpretation of archeological properties, the Minnesota SHPO developed a series of statewide historic context documents outlining the various cultural periods through time. The first among these to be produced, outlining prehistoric contexts, describes the different precontact cultures identified throughout the state from approximately 12,000 to 300 years ago (Dobbs 1989). In the document, Dobbs (1989:44-239) identifies six subdivisions comprising Minnesota's prehistoric conceptual framework. These subdivisions, from oldest to most recent, are: *Pre-projectile Point Pattern*; *Fluted Point Pattern*; *Lanceolate Point Pattern*; *Archaic Stage*; *Ceramic/Mound Stage*; and *Late Prehistoric Period*. No definitive sites of the Pre-projectile Point pattern have been documented in Minnesota to-date, but see Anfinson (2007), Buhta et al. (2011:12-15), Olmanson (2007, 2008), and Olmanson and Wells (2005, 2006) for discussions and debates on this topic. For the purposes of this discussion, the second two subdivisions identified by Dobbs (1989) have been combined into what will be termed the Paleoindian period, and the Ceramic/Mound Stage is reclassified as the Woodland period in keeping with the recently produced *Minnesota Statewide Multiple Property Documentation Form for the Woodland Tradition* (Arzigian 2008).

PALEOINDIAN PERIOD

The Paleoindian tradition (ca. 12,000-8000 RCYBP) was adapted to hunting megafauna and other large game during the late Pleistocene and early Holocene. However, recent studies have provided increasing evidence to suggest that foraging and small game hunting strategies played equal, and sometimes more prominent, roles in the subsistence strategies of certain Paleoindian groups (see Bamforth 2007; Frison and Walker 2007). Evidence of this tradition is largely derived from isolated surface finds and small, temporary encampments associated with the butchering of mammoths and extinct forms of bison. Extensive projectile point variation and geographic distribution within this tradition are indicative of a nomadic lifestyle (Frison 1991; Figure 7).

Figure 7. Selection of Paleoindian projectile points demonstrating the range in variation between given complexes. Complexes represented from left to right are: Clovis, Folsom, Agate Basin, Hell Gap, Eden, and Dalton (specimens from ALAC comparative collection).

Two primary historic patterns comprise the Paleoindian tradition in Minnesota: the Fluted Point Pattern and the Lanceolate Point Pattern. The Fluted Point Pattern includes both Clovis and Folsom contexts (Dobbs 1989:50-53); however, recent evidence of other eastern fluted variants in Minnesota, such as Gainey, Holcombe, and Barnes, suggests that these types should perhaps be included here as well (see Buhta et al. 2011:15-17). Dobbs (1989:50) assigns this pattern to an approximate time frame of 11,500-10,000 RCYBP; however, there are no absolute dates associated with early Paleoindian finds in Minnesota. The Lanceolate Point Pattern is assigned to an approximate time frame of 10,500-8,000 RCYBP (Dobbs 1989:64), although, again, chronological control

is severely lacking in Minnesota for this pattern. Contexts attributed to this pattern include Dalton and Plano. The Plano context includes several different projectile point styles, such as Agate Basin, Hell Gap, Browns Valley, Alberta, Cody, and others (Dobbs 1989:69-72).

Evidence of Paleoindian groups in northwestern Minnesota is extremely scarce and the majority of artifacts identified in association with these groups are isolated surface finds documented in collections of local avocationals (Florin 1996; Magner 1994). No sites with Paleoindian components have been documented in the Red Lake County study area; however, Paleoindian projectile points have been recorded in artifact collections from both Archaeological Subregions 6n and 7w (Anfinson n.d.; Florin 1996; Magner 1994), as well as at the professionally excavated Donarski site (21MA33) (Kluth and Hudak 2004:36-39). Buhta et al. (2011) provide a more detailed discussion of the Paleoindian presence in Minnesota.

ARCHAIC PERIOD

The transition between the Pleistocene and the Holocene was accompanied by many significant changes, including a warmer, drier climatic regime, the extinction of numerous species of megafauna, and an increase in bison populations across the Plains. Among early New World inhabitants, these changes necessitated adaptations in subsistence strategies, which focused upon a far broader spectrum of resources. The result was an increase in reliance upon foraging and local plant materials, as well as the hunting of smaller game species and, in the western part of the state, the numerous bison beginning to populate the area. Between approximately 5000 and 3000 RCYBP, the use of native copper for ornament and tool production appears in artifact assemblages from Minnesota as part of the *Old Copper Culture* (Mason 1998:606-608). Additionally, atlatl and dart hunting technology became far more prevalent during this time, a trend that is reflected in the smaller, notched and stemmed projectile point forms characteristic of the period (Figure 8). This period of environmental change and accompanying cultural adaptation is classified as the Archaic.

Because it spans a considerable timeframe, ca. 8500-2000 RCYBP, the Archaic in North America was traditionally subdivided into Early, Middle, and Late periods; however, the Archaic-period historic contexts developed for Minnesota are, instead, defined by patterns of regional/environmental adaptive strategies. Four contexts were identified in Minnesota: the *Shield Archaic*, *Lake-Forest Archaic*, *Prairie Archaic*, and *Eastern Archaic* (Dobbs 1989:82). Of these, the context most relevant to the current study area is the Prairie Archaic. Dobbs (1989:92) likens the Prairie Archaic groups to those classified as *Plains* Archaic further to the west. Evidence from several of these sites suggests a subsistence strategy focused heavily around bison hunting (Anderson and Semken 1980; Michlovic 1987a; Shay 1971); however, a variety of other resources were also found to have been utilized when available (Dobbs 1989:92-95; Shay 1978).

Figure 8. Selection of Plains Archaic projectile points. Complexes represented from left to right are: Yonkee, Oxbow, Pelican Lake, and Besant (specimens from ALAC comparative collection).

In northwestern Minnesota, the majority of Prairie Archaic research has focused on the Red River Valley Region, and detailed site studies have been carried out southwest of the study area at the Canning and Moody sites (Michlovic 1983, 1985, 1986, 1987a) and north of the study area at the Donarski site (Kluth and Hudak 2004). Johnson (1964:12-14) identified 17 Old Copper artifacts that had been collected from along or near relict Lake Agassiz beach ridges between Browns Valley and Marshall County in Region 6. No Archaic-period sites have been professionally documented in the Red Lake County study area. However, two native copper projectile points were collected from the surface of plowed fields in the county sometime in the early 1900s, by a collector named J. F. Norman (Jenson 1962:65; Johnson 1964:13). In 1953, Norman donated these and other copper artifacts collected from the region to the Science Museum of Minnesota (Jenson 1962:65). The general areas of these finds, both isolated artifacts of suspected Archaic affiliation, have been designated sites 21RLg and 21RLh, respectively.

WOODLAND PERIOD

The Woodland period (ca. 3000-300 RCYBP) featured the introduction of new technologies, economies, and social practices throughout the Plains and Upper Midwest. Broadly speaking, Woodland subsistence strategies are considered comparable to those of the preceding Archaic tradition, augmented by an increased reliance upon horticultural practices (Gibbon 1998:230) and, later in Minnesota, upon the harvesting of wild rice (Johnson 1994:3-32). Additional changes of significance during this time include the introduction of ceramics, semi-permanent dwellings coupled with increased population density (Grange 1980; Hill and Kivett 1940; Hoffman 1968; Johnson 1994:3-32), bow and arrow utilization, and burial mound construction (Howard 1968; Johnson 1973a; Neuman 1975).

In the eastern United States, the Woodland tradition is segregated into *Early*, *Middle*, and *Late* periods; however, Dobbs (1989:106) questioned the applicability of a traditional 'Woodland' classification for Minnesota, hence the change in nomenclature to Ceramic/Mound Stage. He notes that, except perhaps in the southeastern quarter of the state, there really is no manifestation of 'Early' Woodland in Minnesota's archeological record (Dobbs 1989:107) insofar as the traditional definition is concerned, and many of the other hallmarks of the period, such as horticultural practices and burial mound construction, occurred late relative to ceramic technology, which itself developed at different times in different parts of the state (Anfinson and Wright 1990:222; Dobbs 1989:106). More recently, the Ceramic/Mound Stage was again classified as the Woodland tradition (Arzigian 2008), and this report will, therefore, refer to it as such.

Arzigian (2008:1) identifies 11 historic contexts associated with the Woodland tradition in Minnesota. These contexts are: the *Brainerd Complex*, the *Southeast Minnesota Early Woodland Complex*, the *Havana–Related Complex*, the *Laurel Complex*, the *Fox Lake Complex*, the *Lake Benton Complex*, the *Central Minnesota Transitional Woodland Complex*, the *Southeast Minnesota Late Woodland Complex*, the *Blackduck-Kathio Complex*, the *Rainy River Late Woodland Complex*, and the *Psinomani Complex*. Those contexts most relevant to the current study area and Archaeological Regions 6 and 7 are the Laurel and Blackduck-Kathio complexes. A few sites with Brainerd and Central Minnesota Transitional Woodland ceramics have been documented in northwestern Minnesota, as have a fair number of later Psinomani sites; however, many of the Psinomani sites in this area appear to be concentrated further west along the valley of the Red River of the North (Arzigian 2008:196-211).

Chronologically, the Brainerd complex is recognized as the earliest of northern and central Minnesota's Woodland-period contexts, dating from approximately 2750-1700 RCYBP (Hohman-Caine and Syms 2012:ii). The presence of Brainerd complex sites in northwestern Minnesota is very ephemeral, however, and Arzigian (2008:19) notes that only four such sites have been documented in Subregion 7W while only two have been documented in Subregion 6N. No sites with Brainerd complex components have been documented in the Red Lake County study area to-date.

The Laurel complex is a northern Minnesota Middle Woodland manifestation dating from approximately 2150-1350 RCYBP. The majority of identified Laurel sites are concentrated to the east and southeast of the study area. Only 10 sites with Laurel components have been documented in Region 7 and only seven have been documented in Region 6 (Arzigian 2008:53). In the Red Lake County study area, the Red Lake River Mounds site, 21RL1, is documented as having a suspected Laurel component. This site also has a suspected Central Minnesota Transitional Woodland component, as well as a third, unidentified Late Woodland component.

The Central Minnesota Transitional Woodland complex, which spans some 700 years from approximately 1700-1000 RCYBP, covers the transitional period between culture groups of the more commonly identified Middle and Late Woodland periods (Arzigian 2008:85). This complex is largely a central Minnesota manifestation; however, a small selection of five sites with components from this complex has been documented in Region 6 (Arzigian 2008:206). No sites of the Central Minnesota Transitional Woodland complex have yet been identified in Region 7. In the Red Lake County study area, one site with a suspected component from this complex has been documented. This site, the Red Lake River Mounds site (21RL1), also includes a suspected earlier Laurel component and a Late Woodland component.

The Blackduck-Kathio complex is a northern and central Minnesota terminal Woodland manifestation dating from approximately 900-600 RCYBP. Blackduck is the most commonly reported Woodland-period component in northern Minnesota; however, only 16 sites with Blackduck components have been documented in Region 6 and only 11 have been documented in Region 7 (Arzigian 2008:107). A northwestern Minnesota burial mound site at Lake Bronson,

21KT1, associated with the previously defined Arvilla burial mound complex (Johnson 1973a), yielded a ceramic mortuary vessel of Blackduck design from a primary interment (Anfinson et al. 1978). One site with suspected Blackduck affiliations, 21RL3, has been documented in the study area.

The Psinomani complex represents the latest of northern and central Minnesota's Woodland-period contexts. It is first recognized in the terminal Woodland and can be further traced through the protohistoric and even into early historic times. This complex occupies a timeframe of some 650 years from approximately 900-250 RCYBP (Arzigian 2008:126). Thirty-four Psinomani sites have been documented in Region 6 and 12 have been documented in Region 7 (Arzigian 2008:211). No Psinomani complex sites have been documented in Red Lake County to-date.

LATE PREHISTORIC PERIOD

The Late Prehistoric period (ca. 1000-300 RCYBP) is traditionally heralded by the appearance and refinement of horticulture in association with semisubterranean earthlodge dwellings in large, complex village settlements reflective of increasingly sedentary lifeways (Scheiber 2006:597; Scott et al. 2006:35). Settlement fortification is common during this time, suggesting that the increased levels of interaction were not always on friendly terms. Additionally, a trend in projectile point technology during this time, increasingly favoring smaller, corner- and side-notched varieties, suggests a greater reliance upon the bow and arrow for the procurement of bison and other game (Frison 1991:111). In contrast to the Woodland period, Late Prehistoric ceramics traditionally exhibit thinner vessel walls, hotter and more even firing, and a broader range of decorative motifs and stylistic designs.

In the northeastern Plains and the prairie-forest border, these developments were, however, scaled-back as compared to some of the massive earthlodge villages found along the Missouri River further to the west. Fortification systems were still common among village settlements of the northeastern Plains, but the expansive villages seen along the Missouri were replaced with much smaller "hamlets" (Holley and Michlovic 2010:14). There appears to have been less reliance upon intensive farming practices and the subsistence economy, instead, continued to also consist of regular bison hunting augmented by the hunting and gathering of additional local resources (Michlovic 2008:35; State Historical Society of North Dakota [SHSND] 1990:B.36).

Dobbs (1989:191) initially identified six historic contexts associated with Minnesota's Late Prehistoric period: *Great Oasis*, *Oneota*, *Cambria*, *Blackduck*, *Kathio*, and *Sandy Lake*. However, since the original classification of these contexts, new data have resulted in a multitude of changes to this list. The Blackduck and Kathio contexts have since been amalgamated into a single context and reclassified as a terminal Woodland manifestation (see above). After reevaluation, Sandy Lake has been changed from a context to a ceramic ware associated with the terminal Woodland/Protohistoric/early Historic Psinomani context (Arzigian 2008:126; see above). Cambria and Great Oasis have been included with a third context, *Big Stone*, as part of the broader Plains Village tradition (MHS 2006:4). The Oneota context has been classified, together with the *Blue Earth* and *Orr* contexts, under the larger umbrella of the Oneota tradition (MHS 2006:4). Finally, a context called *Silvernale* was defined and placed within the broader Mississippian tradition (MHS 2006:4).

The transition between the Woodland and Late Prehistoric periods in northern Minnesota is poorly defined. Rather than village cultures replacing Woodland groups, as was common on the Plains, contexts associated with the Woodland tradition in northern Minnesota can be traced through time until European contact and beyond. In general, what Late Prehistoric presence has been identified in the northwestern part of the state appears to be a complex interaction among groups from the northeastern Plains, the Psinomani, and others from the lake-forest region further east (Dobbs 1989:185; Toom 2004). Much of the archeological evidence for this is found along the Red River Valley further west and south of the study area. Mississippian Silvernale sites have no identifiable presence in the archeological record of northwestern Minnesota to-date. Sites associated with this context are primarily focused around a small locality near the confluence of the Cannon and Mississippi rivers in southeastern Minnesota. Oneota sites of the Blue Earth and Orr contexts are southern Minnesota manifestations, as are the Plains Village Great Oasis sites. Sites of the Cambria and Big Stone contexts are also located further south, from the Lake Traverse/Big Stone Lake area south into southwestern Minnesota and northeastern South Dakota. The only Late Prehistoric context with the potential to be discovered in the current study area, and with some degree of presence in Archaeological Subregions 6n and 7w, is Oneota. However, it should be noted that no Oneota sites have yet been identified in Red Lake County.

Although specific Cambria sites are largely absent from Subregions 6n and 7w, a Plains Village presence *has* been documented in the Red River Valley just west of the study area. The Northeastern Plains Village complex (NEPV), first identified by Picha and Gregg (SHSND 1990:B.36-37), occupied an area including western Minnesota, eastern South Dakota and North Dakota, northwestern Iowa, southwestern Manitoba and southeastern Saskatchewan between approximately 1000 and 200 RCYBP (Holley and Michlovic 2010:14). These people occupied fortified hamlets that were smaller and more simplistic than the extensive earthlodge villages built further west by their Middle Missouri contemporaries, and their subsistence was focused less intently on agriculture as well (Holley and Michlovic 2010:14). Based on radiocarbon chronology and ceramic attribute similarities, Toom (2004:291-292) argues that the NEPV is a regional extension of Cambria that entered the region from further south. If this is the case, then Cambria would, indeed, have a likely presence (at least indirectly) in the region and possibly the study area proper. Regardless, it is possible that some degree of NEPV presence could be expected within the Red Lake County study area.

An Oneota presence in the northeastern Plains and Minnesota's lake-forest region has been documented for some time (see Gibbon 1995; Michlovic 1983:25). Holley and Michlovic (2010:13) place the Oneota presence in this area temporally between approximately 700 and 400 RCYBP. The Oneota tradition is a Mississippian-influenced cultural phenomenon characterized by largely sedentary village societies centered on an agricultural/bison hunting subsistence economy. It is largely defined within the archeological record by its hallmark pottery; shell-tempered, globular pots with smoothed surfaces, constricted necks, outward-flaring rims, and a distinct design motif consisting of broad rectilinear patterns confined to the vessel shoulder area (Anfinson 1979:39). The majority of sites with Oneota or Oneota-like ceramics identified in northwestern Minnesota and southeastern North Dakota are clustered around the Red River Valley to the west and south of the study area; however, Oneota sites may be present in Red Lake County.

THE PROTOHISTORIC PERIOD AND EARLY EUROPEAN CONTACT

When the first European explorers reached what is now Red Lake County in the late-seventeenth/early eighteenth century (approximately 300 RCYBP), the area was home to groups of Siouan-speaking Assiniboine and Dakota peoples, as well as to members of the Algonquian-speaking Cree (Magner and Dudzik 1995:4). The archeological record of the period immediately preceding European contact in northern Minnesota can be classified as "cloudy." What is known about this time suggests that significant and abrupt lifeway changes were occurring. Gibbon (2012:198-199) attributes these perceived changes to the emergence of a tribal lifeway that favored a diversified subsistence economy oriented around an increasingly sedentary "collection" strategy. This strategy placed a greater emphasis on stored foods and the harvesting of wild rice and other aquatic resources (such as fish, migratory waterfowl, and mollusks) while deemphasizing (though not abandoning) the more mobile "foraging" strategy that focused on the exploitation of large terrestrial mammals. These changes also would have resulted in the concentration of population groups into more permanent, centralized settlements (Gibbon 2012:199). In northwestern Minnesota, archeological evidence of these changes is most readily apparent among site assemblages attributable to the Psinomani complex. As previously mentioned, archeologists have yet to identify a Psinomani site in Red Lake County. However, their documented presence elsewhere in Archaeological Regions 6 and 7, coupled with historical and ethnographic evidence of later tribal groups in the Red Lake County area, suggests that these sites will also eventually be identified in the county.

BACKGROUND RESEARCH

PREVIOUS INVESTIGATIONS

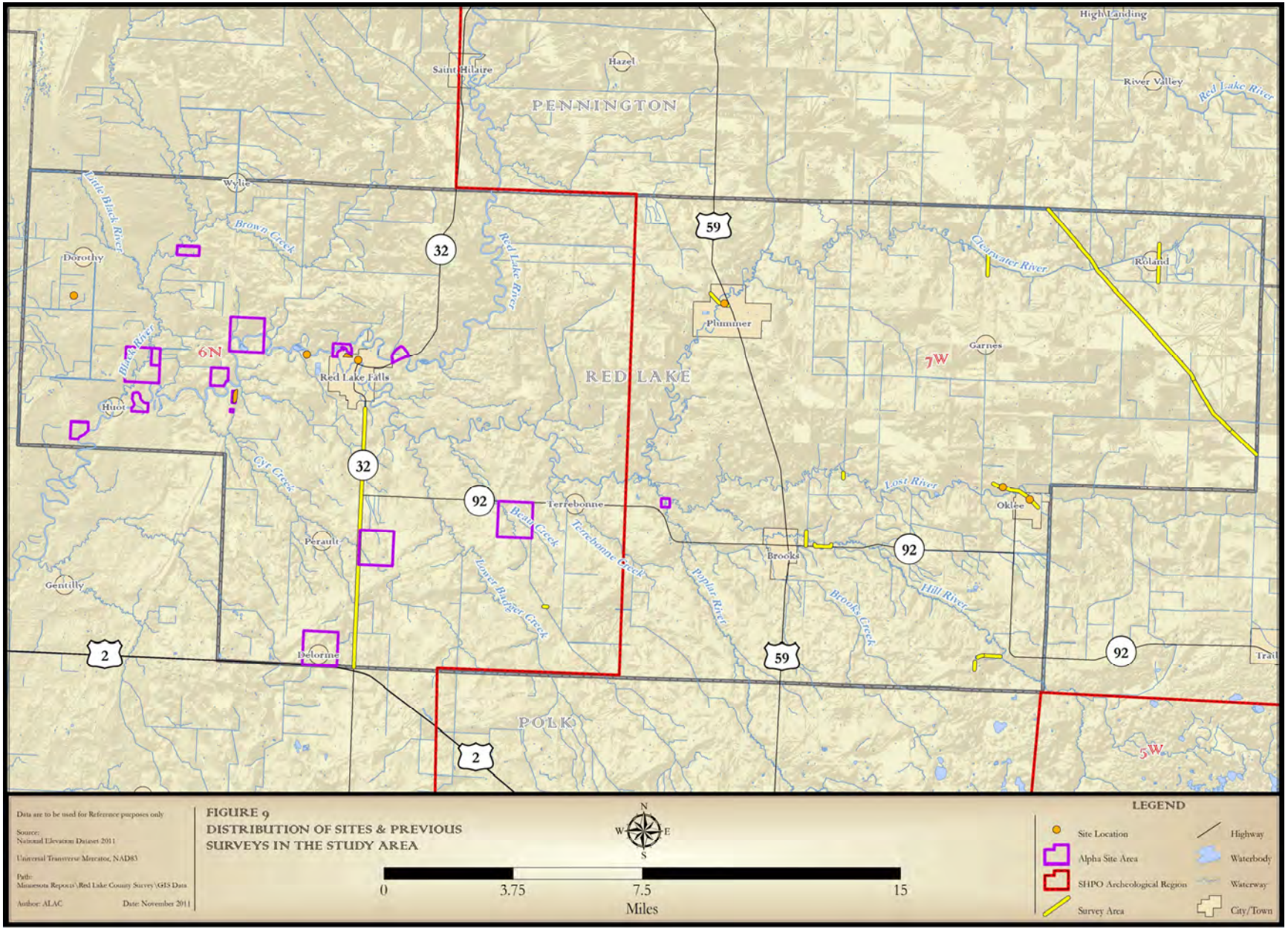
Very few systematic archeological investigations have been conducted in Red Lake County to-date. The earliest research conducted in the county centered on the documentation and investigation of prehistoric burial mounds. In the late nineteenth century, surveyor Theodore H. Lewis documented a group of six mounds located along the Red Lake River southwest of Red Lake Falls (Lewis 1886). This site, identified as the Red Lake River Mounds, was later reported by Newton Winchell (1911:362) and ultimately was assigned the trinomial designation 21RL1. In 1936, three of the mounds comprising site 21RL1 were excavated by Albert E. Jenks of the University of Minnesota (E. Johnson 1973a:31-35, 1973b; Wilford 1941). In 1960, two small conical mounds were excavated in the western part of the county south of Dorothy (E. Johnson 1961). These mounds were assigned site number 21RL2. Though one of the mounds did contain an outline of a shallow pit feature, they were otherwise found to contain neither interments nor funerary objects (E. Johnson 1961:4). Both sites 21RL1 and 21RL2 were subsequently reported in a statewide synthesis of Minnesota's Indian mounds and burial sites (Arzigian and Stevenson 2003:478-479).

In the early 1970s, the U.S. Army Corps of Engineers proposed to dam a portion of the Red Lake River in northern Polk County. This dam would have inundated much of the land along the Red Lake and Black rivers upstream to the Red Lake Falls area beneath a reservoir pool. As part of the project study, an archeological investigation was conducted of those areas below the projected reservoir pool level. This investigation, undertaken by the University of Minnesota Archaeology Laboratory, identified multiple areas of cultural material, either directly by pedestrian survey or indirectly through interviews with local collectors and landowners (Streiff and Roney 1973). Only one of these identified areas, the upper terrace above Sportsman's Park in Red Lake Falls, was designated an official archeological site. The area, which was interpreted to be a Woodland-period habitation, was designated site 21RL3 (Streiff and Roney 1973:5-6). Unfortunately, official site numbers were not assigned to any of the other artifact localities. The dam was never constructed.

In 1988, riverbank erosion along the Clearwater River in Red Lake Falls exposed two late nineteenth century Euroamerican burials. The burials were documented and salvaged by a crew from the OSA. They were subsequently designated site 21RL4. The 21RL4 site file indicates that no formal report was prepared for this locale (OSA 21RL4 site file).

From approximately the 1980s onward, archeological work undertaken in Red Lake County has been limited to a small number of investigations conducted primarily in response to Section 106 review and compliance legislation (Figure 9).[1] These investigations have largely consisted of small, limited acreage surveys, the majority of which were confined to narrow linear corridors for County Highway (see for example Anfinson and Peterson 1988; Justin 1996; Magner and Dudzik 1995), Trunk Highway (see for example Peterson and Pfutzenreuter 1980; L. Peterson 1981; L. Peterson et al. 1989), and pipeline projects (Bielakowski et al. 2007; Breakey et al. 1994; Doperalski and Van Vleet 2008). Two additional small-scale farm surveys were conducted for the Farmers Home Administration during this time (Johnson 1990; D. Peterson 1993). Collectively, these investigations resulted in the documentation of two prehistoric isolated find sites, 21RL6 (Breakey et al. 1994:63) and 21RL7 (C. Johnson 1990), a lithic scatter site, 21RL8 (Doperalski and Van Vleet 2008:15), and a multi-component lithic scatter/historic-period dump, site 21RL5 (Breakey et al. 1994:63-64).

[1] The data layer *survey area* in Figure 9 was provided by Elizabeth Hobbs, MNDOT. It does not reflect every survey area in the county; rather, it identifies only those areas for which boundaries could be reasonably ascertained from original project reports, GIS shapefiles, and maps.


PENNINGTON
RED LAKE
POLK
Saint Hilaire
Hazel
High Landing
River Valley
Red Lake River
Wylie
Little Black River
Brown Creek
Dorothy
32
59
Clearwater River
Roland
Plummer
Garnes
6N
7W
Red Lake Falls
Huot
Black River
Cyr Creek
92
Terrebonne
Bear Creek
Terrebonne Creek
Lost River
Oklee
Perault
Brooks
Poplar River
Hill River
Brooks Creek
Gentilly
Lower Badger Creek
Delorme
2
5W
Trail
FIGURE 9
DISTRIBUTION OF SITES & PREVIOUS
SURVEYS IN THE STUDY AREA
Data are to be used for Reference purposes only
Source:
National Elevation Dataset 2011
Universal Transverse Mercator, NAD83
Path:
Minnesota Reports\Red Lake County Survey\GIS Data
Author: ALAC
Date: November 2011
N
W
E
S
0
3.75
7.5
15
Miles
LEGEND
Site Location
Alpha Site Area
SHPO Archeological Region
Survey Area
Highway
Waterbody
Waterway
City/Town

PREDICTED SITE LOCATIONS

No archeological site predictive studies have been previously completed specifically for Red Lake County. However, five previous studies that have addressed areas within a larger, regional framework are relevant to the current project. Each of these studies is briefly addressed here.

The first study was developed as part of the Statewide Archaeological Survey (SAS), and modeled prehistoric site locations in western Clay County, Minnesota (MHS 1981:29-32). Located only some 50 miles southwest of the current study area, Clay County is within Archaeological Region 6 and, therefore, shares a number of geomorphic characteristics with the western half of Red Lake County. Chief among these are the low-lying Lake Agassiz lacustrine plain and the series of north-south-trending relict beach ridges. Data for the Clay County study were obtained through a probabilistic pedestrian survey of 131 40-acre parcels. The parcels sampled were assigned to one of four different landscape settings for the purpose of modeling: streamshore settings, beach ridge settings, settings where streams intersected beach ridges, and settings located away from fresh water (MHS 1981:31). Survey results indicated that streamshore settings harbored the majority of prehistoric sites and that beach ridges intersected by streams reflected the next highest percentage. Beach ridge settings away from streams and lake plain settings away from fresh water had few sites, although the beach ridges intersected by streams also harbored relatively few sites compared to what was originally anticipated (MHS 1981:32).

Two other large-scale surveys were conducted in Region 6 during the 1980s, one in Norman County, Minnesota (Michlovic 1982) and the other in Cass County, North Dakota (Michlovic 1987b). Although the Norman County survey was largely focused on the Red River Valley proper, it did result in the identification of 41 previously undocumented archeological sites; most of the sites were affiliated with Late Woodland groups (Anfinson 1990:159). The Cass County survey included an examination of a much wider variety of landform settings and was conducted in a similar fashion to the earlier SAS survey. During the Cass County study, randomly selected 40-acre and 160-acre parcels were surveyed in three predefined landscape settings: river shore, open lake plain, and beach ridge. Results of this survey were similar to those of the SAS investigation where the highest frequency of sites was identified in the river shore setting. Beach ridge and open lake plain settings yielded comparably lower site frequencies (Anfinson 1990:160).

The fourth study, by Anfinson (1990), consisted of a synthesis of known and predicted site locations as part of the SHPO's development of archaeological regions. Anfinson (1990:151-161) provides a separate summary of known and predicted site locations for each archaeological region, although his focus with respect to predicted site locations is directed towards Woodland-period sites. For Region 6, it is predicted that Woodland base camps should be located along major waterways near ample supplies of timber. Temporary camps should also be located along waterways. Burial mounds and lithic procurement sites are predicted to be located along beach ridges, as these areas represent the only prominent topography in the region while also representing the only readily available source of lithics. Subsistence sites are likely to occur anywhere within the region (Anfinson 1990:159). In Region 7, Woodland base camps are predicted to be located along the lakes and major rivers, particularly river confluence areas. Smaller camps are predicted to be located in similar settings, as well as along tributary streams and near marshes. Resource procurement sites are also likely to be near water sources, and mounds should be on high ground overlooking the lakes and streams. All such sites are predicted to be rare within the peat lands (Anfinson 1990:160).

The most comprehensive site predictive study to be undertaken in Minnesota to-date is the MN/Model (Hudak et al. 2002). MN/Model is a GIS-based statewide predictive locational model for prehistoric archeological sites. It utilizes a suite of statistical models to map archeological site potential for surface sites that predate 1837 (MNDOT 2002a). Because of the immense scope of the project and the extreme environmental variability present throughout the state, a regional approach was necessary. As part of this regional approach, the state was segregated into 20 distinct subsections based on a series of defining environmental characteristics, and separate models were generated for each of these areas.

Red Lake County is located within two of these subsections. The majority of the study area is located within the *Aspen Parklands* Subsection (MNDOT 2002b); however, a small portion in the extreme southwestern corner of the county lies within the *Red River Prairie* Subsection (MNDOT 2002c). The model for the Red River Prairie subsection predicts that the majority of high potential areas follow the valley of the Red River of the North. It also predicts that other

areas of high and medium site potential will be found along the major tributaries of the Red River, as well as along some of its minor tributaries (MNDOT 2002d). The Aspen Parklands subsection model places the majority of high potential areas around water features; the largest of these areas surrounds Thief Lake. Additional areas of high and medium site potential are predicted to be found along the major tributaries of the Red River, as well as along some of its minor tributaries (MNDOT 2002e).

A current Red Lake County model was generated from the MN/Model for this project by Elizabeth Hobbs, MNDOT (Figure 10). At present, a considerable portion (37.9 percent) of the county's archeological site potential is classified by the model as *unknown*. This is an artifact of the lack of survey work conducted throughout the study area thus far. The model classifies 12.6 percent of the surveyed study area as having *high* archeological site potential, 12.3 percent as having *medium* site potential, and 75.1 percent as having *low* potential (Elizabeth Hobbs, MNDOT, personal communication 2012). The areas exhibiting the highest site locational probability are in the western half of the county along the Red Lake, Black, and Clearwater rivers, as well as along Lower Badger Creek. A sizable area of low site potential is modeled in the approximate eastern one-third of the county.

It should also be mentioned that although results from previous regional surveys have indicated that glacial lake beach ridges are not accurate indicators of prehistoric site distribution (Dobbs et al. 1994:16; Michlovic 1987b:55; MHS 1981:29-32), evidence obtained through an examination of private artifact collections (Magner 1994:61) and a more recent examination of mapped site distributions (Kluth and Hudak 2004:10-11) suggests that a connection may, indeed, exist between late Paleoindian groups and the Agassiz beach ridges in northwestern Minnesota.

ARCHEOLOGICAL SITE COMPOSITION

The very limited archeological work conducted in the study area prior to this investigation resulted in the professional documentation of only eight sites in Red Lake County (Table 3). Reports by area avocational archeologists, historians, and landowners identified an additional 16 unconfirmed (alpha) site localities in the study area (Table 4). Of the 24 total sites identified previously, nine were revisited during the current study. The remaining 15 properties were not revisited because the sites in question were temporally beyond the scope of the current investigation (i.e., they were contact-period or historic sites), or because landowners denied access permission or were not able to be contacted. Sites that were reexamined, as well as all newly documented properties, are discussed in greater detail in the following chapter.

Table 3. Previously Documented Archeological Sites in Red Lake County.

Site Number	Cultural Affiliation (Context)	Site Type/ Function	Revisited by ALAC?	Archaeological Subregion
21RL1	Woodland (possible Laurel and Transitional; confirmed Late Woodland)	Earthwork/ Burial Mound	Yes	6n
21RL2	Woodland (possible Late Woodland)	Earthwork/ Burial Mound	No	6n
21RL3	Woodland (possible Blackduck)	Artifact Scatter	No	6n
21RL4	Post-contact	Cemetery/ Mortuary	No	6n
21RL5	Precontact and Post-contact	Lithic Scatter and Artifact Scatter	No	7w
21RL6	Precontact	Single Artifact	Yes	7w
21RL7	Precontact	Single Artifact	No	6n
21RL8	Precontact	Lithic Scatter	No	7w

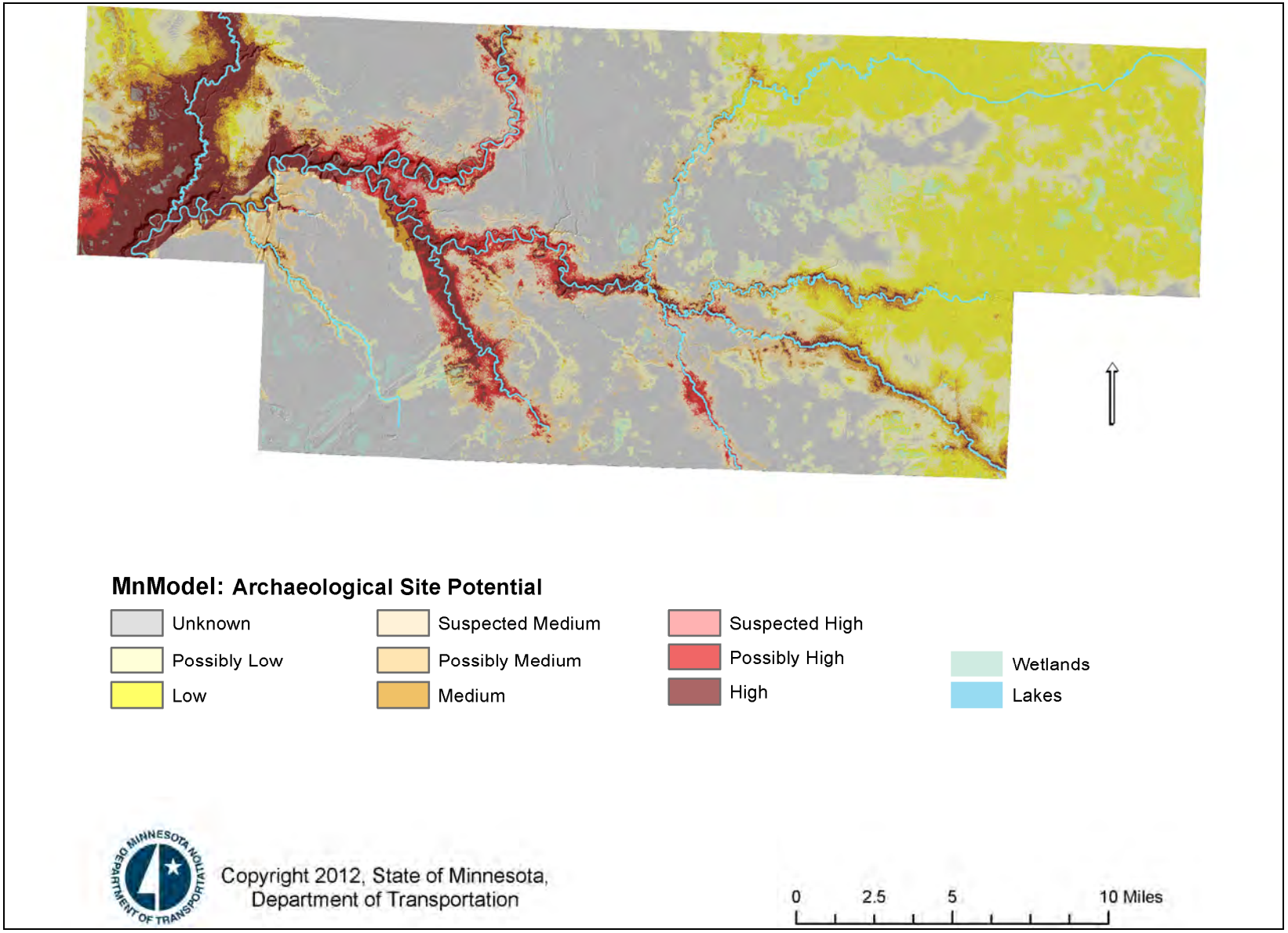


Figure 10. MN/Model for archeological site potential in Red Lake County (courtesy of Elizabeth Hobbs, MNDOT).

Table 4. Previously Reported Alpha Sites in Red Lake County.

Site Number	Cultural Affiliation (Context)	Site Type/ Function	Revisited by ALAC?	Archaeological Subregion
21RLa	Precontact and Post-contact	Artifact Scatter, Feature, Earthwork	Yes	6n
21RLb	Contact and Post-contact	Trading Post	No	6n
21RLc	Precontact (possible Woodland)	Earthwork/ Burial Mound	Yes	7w
21RLd	Post-contact	Ghost Town (Delorme)	Yes	6n
21RLe	Post-contact	Ghost Town (Hilltop)	Yes	6n
21RLf	Post-contact	Ghost Town	No	6n
21RLg	Precontact (possible Archaic)	Single Artifact (copper projectile point)	No	6n
21RLh	Precontact (possible Archaic)	Single Artifact (copper projectile point)	No	6n
21RLi	Precontact	Artifact Scatter	Yes	6n
21RLj	Precontact	Artifact Scatter	No	6n
21RLk	Precontact	Artifact Scatter	No	6n
21RLl	Unknown	Unknown	No	6n
21RLm	Unknown	Artifact Scatter	No	6n
21RLn	Contact	Cemetery (Cyr Cemetery)	No	6n
21RLo*	Woodland (possible Laurel and Transitional; confirmed Late Woodland)	Earthwork/ Burial Mound	Yes	6n
21RLp	Post-contact (Northern Minnesota Lumbering)	Ruins/Lumber Mill	Yes	6n

*** Site 21RLo is the same site as 21RL1 (Red Lake River Mounds).**

Table 5. Cultural Components Previously Identified in Red Lake County by Archaeological Subregion.

Cultural Period/ Tradition	Specific Context Identified?	Red River Valley North Subregion	Northern Bog West Subregion	Total Count	Percent of Total
Paleoindian	—	0	0	0	0
Archaic	—	2	0	2	8.0
Woodland	Possible Laurel, Transitional, and Blackduck	4	1	5	20.0
Late Prehistoric	—	0	0	0	0
Unidentified Precontact	—	5	3	8	32.0
Contact Period	French and Initial U.S.	2	0	2	8.0
Post-contact Period	—	7	1	8	32.0
Total Count	—	**20**	**5**	**25**	**100.0**

The 24 previously documented and reported archeological sites are comprised of 25 identifiable cultural components (Table 5). Of these, 40 percent are either Contact or Post-contact Euroamerican components and another 32 percent are precontact sites for which no more specific cultural designation is possible. In fact, only 28 percent of the precontact components are identifiable to a specific cultural tradition. Of these, the majority, or five components (20.0 percent), is affiliated with the Woodland tradition. The remaining two precontact components (8.0 percent) are reported surface finds of native copper projectile points tentatively affiliated with the Archaic tradition. No Paleoindian or Late Prehistoric components were previously identified in the study area.

NATIONAL REGISTER PROPERTIES

Only two historic properties in Red Lake County are currently listed in the National Register of Historic Places (NRHP); neither of these are archeological sites. The NRHP-listed properties are the Red Lake County Courthouse in Red Lake Falls and the Clearwater Evangelical Lutheran Church near Oklee. These buildings were officially listed in the National Register in 1983 and 1999, respectively (National Park Service 2012). Of the eight previously documented archeological sites in the county, four (sites 21RL5-21RL8) have been evaluated, at least in part, for NRHP eligibility. None of these sites were found to be eligible for NRHP listing. Sites 21RL5, 21RL6, and 21RL7 were recommended not eligible. While the portion of site 21RL8 that was evaluated was found to be non-contributing, the entirety of the site boundary was never established because it extended beyond the limits of the project Area of Potential Effect. Sites 21RL1 through 21RL4 were never technically evaluated for NRHP eligibility.

RESEARCH SUMMARY AND QUESTIONS

The ability to extrapolate meaningful conclusions from such a limited dataset is clearly restricted. Nevertheless, a select number of general research-oriented questions can be formulated at this juncture. While other research questions concerning the archeology of Red Lake County could doubtless be generated, it was felt that the questions posited here should be based on the extent and scope of the current study while retaining sufficiently broad applicability elsewhere in Archaeological Regions 6 and 7. The four questions are:

1) **Is the perceived paucity of prehistoric sites in the study area the result of environmental factors restricting the extent and tempo of human occupation, or is it simply the result of the limited amount and scope of previous archeological work?** A glance at Figures 9 and 10, above, reveals just how little attention the study area has received archeologically. Of the archeological work that has been conducted in the county, the vast majority has been relegated to either pedestrian surface survey of very small areas or excavation specifically focused on mortuary sites. Although it was felt, initially, that the answer was likely to fall somewhere in-between, it was also suspected that the reason was more heavily weighted towards the lack of previous investigations and/or the survey methodology.

2) **Will the assemblage of prehistoric sites in the study area continue to be dominated by Woodland-period cultural components and why/why not?** This two-pronged question is, admittedly, based on an extremely finite sample set. It nevertheless warrants further investigation because previous research in northwestern Minnesota has produced similar results wherein the prehistoric site component assemblage was predominantly comprised of Woodland material (Michlovic 1982). Regardless of the end result, the cogent part of this question is the *why*. If Woodland sites clearly seem to be more pervasive, then what is the reason behind their relative frequency? Conversely, if they do not appear particularly predominant, then what may have made the current study area less desirable than the Red River area to the southwest, or why are we not detecting these sites in the archeological record? Perhaps this, again, has more to do with a combination of limited investigations and research orientation/survey methodology than anything else.

3) **What is the potential for buried sites in the study area, particularly relative to those sites of greatest antiquity?** Not surprisingly, no buried, intact prehistoric sites have been documented in the study area, nor have any detailed geomorphological studies been undertaken to address buried archeological site potential. An assessment of those landforms capable of harboring such sites, conducted in a manner similar to that outlined in the MNDOT deep test protocol (Monaghan et al. 2006) and coupled with a detailed radiocarbon chronological study of river valley landform development, will greatly assist our ability to understand where

certain sites may be encountered and whether some sites are too old to be expected in a given setting. At least one soil series containing a paleosol was mapped in the county prior to this study, and given its distribution and the relatively young geologic age of the landscape, it is likely that this particular paleosol is also quite young. The geomorphic implications of this are directly relevant to the forms of archeological survey methodology that may be required in such settings, and the knowledge of the presence and respective ages of these landforms will greatly assist during the research design and planning phase of future undertakings.

4) **Where do prehistoric sites tend to be located and why?** This is perhaps the most cogent question relative to the current study. Results of previous research in the region suggest a strong correlation between site location and proximity to major waterways (see pages 24 and 25, above) because such areas offer the greatest abundance of resources requisite for survival (e.g., fresh water, forage, access to game, timber for shelter and fire). Findings from the current study are later compared with the results of previous studies, and updated models are presented.

COLLECTIONS DOCUMENTATION AND FIELD INVESTIGATIONS

ARTIFACT COLLECTIONS DOCUMENTED

Three local artifact collections were documented during the current study. Information was also obtained concerning two specimens collected from Red Lake County that are now part of the J. F. Norman Collection presently curated by the Science Museum of Minnesota. The three local collections are all privately owned and, although it is impossible to unequivocally verify their provenience, the majority is believed to have been collected from within the current study area. ALAC personnel examined these collections from July 10-13, 2012. The owner of one of the collections twice accompanied ALAC personnel into the field to confirm the location of his various finds. When possible, artifacts from this collection were correlated with specific site areas.

It should be noted that, in the interest of time management, much of the technical detail pertaining to individual specimens is not included here. Efforts were directed more towards the collation of this data as a means of alerting researchers to the presence of the collections. The following brief overview of the collections is designed to highlight their general composition and provide baseline information for those wishing to pursue future study. Scale photographs are provided for the specimens; however, not every piece was individually documented in this manner. For certain specimens, information such as color, material type, basic metric measurements, outline sketch, and other general observations are provided.

Al Buse Collection

Present Owner: Al Buse	**Present Location:** Red Lake Falls, Minnesota
Composition: One small wooden panel of assorted lithic projectile points and two barbed steel points	**Provenience:** Some from Red Lake County, others given to owner by friends or relatives (unknown provenience)
Accessibility: Uncertain (contact Al Buse)	**Previously Documented?:** No
Documentation Methods: Photographs	**References:** N/A

The Buse collection was photodocumented on July 10, 2012 at the owner's home in Red Lake Falls. Mr. Buse's collection consists of one small wooden panel to which a variety of lithic projectile points and two barbed, steel points are glued (Figure 11). Mr. Buse indicated that he collected a few of the specimens in Red Lake County, while others were given to him over the years by friends and relatives. Unfortunately, no precise locational information was provided for those specimens collected locally, and the owner could not recall which of the pieces were discovered in the county and which were obtained as gifts (Al Buse, owner, personal communication 2012).

Several of the specimens share a variety of production characteristics that typify mass-produced modern replicas often found for sale at tourist shops throughout the U.S., Mexico, and elsewhere (see Figure 11). These include the serial replication of form from different material types, sharp, v-shaped side-notches and rounded serrated blade preparation, coupled with the use of brightly colored, exotic materials and flake blanks for expedited production.

Figure 11. Overview of the Al Buse artifact collection. Some likely modern replicas identified by red arrows.

Anne Healy Collection

Present Owner: Anne Healy	**Present Location:** Red Lake Falls, Minnesota
Composition: One frame of assorted lithic projectile points, bifaces, & one end scraper	**Provenience:** Red Lake County – Red Lake Falls vicinity
Accessibility: Uncertain (contact Anne Healy)	**Previously Documented?:** No
Documentation Methods: Photographs	**References:** N/A

This collection was photodocumented on July 10, 2012 at the owner's home in Red Lake Falls. The collection is small, consisting of a single frame with burlap backing to which assorted lithic projectile points and bifacially worked tools have been fastened by glue and/or thread. The specimens in the collection were acquired by Ed Healy, Anne's grandfather-in-law, who settled in Red Lake Falls in 1900. The artifacts are believed to have been collected from the general vicinity of Red Lake Falls; however, Ms. Healy could not recall a precise provenience for any of the specimens (Anne Healy, owner, personal communication 2012).

Figure 12. Overview of the Anne Healy artifact collection.

Digital and color slide photographs were taken of the collection (Figures 12-16). The specimens appear to have been produced from a variety of glacially derived cobble cherts and chalcedonies. Although a few pieces produced on Knife River flint were observed, the raw material types are generally consistent with locally available sources and no wildly exotic material types were noted. Both Red River chert and Swan River chert were observed in the collection. The tool types include one end scraper, several bifacially worked knives, and a variety of projectile points. Projectile point styles include triangular unnotched, side-notched, corner-notched, and stemmed specimens that appear to represent a temporal range spanning from the terminal Archaic/initial Woodland period through the terminal Woodland period and possibly beyond.

Figure 13. Close-up of selected biface tools and triangular unnotched and side-notched projectile point specimens from the Healy Collection.

Figure 14. Close-up of selected biface tools and corner-notched and side-notched projectile point specimens from the Healy Collection.

Figure 15. Close-up of ovoid biface from the Healy Collection.

Figure 16. Close-up of stemmed projectile point/biface from the Healy Collection.

Ed Moran Collection

Present Owner: Ed Moran	**Present Location:** Huot, Minnesota
Composition: Extensive assortment of prehistoric ceramics and lithic tools and debitage	**Provenience:** Red Lake County & NW Minnesota; much of the material collected is from near the Huot area
Accessibility: Uncertain (contact Ed Moran)	**Previously Documented?:** No
Documentation Methods: Photographs	**References:** N/A

The Moran collection was photodocumented on July 10-12 and October 9, 2012 at the owner's home north of Huot. The collection is extensive – the result of intensive collecting throughout the county over several decades. Mr. Moran acquired his collection personally by walking fields, gravel bars along rivers, beach ridges, and lake shores. The majority of specimens in the collection were obtained in and around the Huot area, although other areas between Huot and Red Lake Falls were collected from as well. One specimen, a lanceolate point base, was collected from Roseau Lake in Beltrami County north of the study area. Mr. Moran remembers the precise location of several of the sites he has collected from and, in many instances, also remembers some of the specific specimens obtained from a certain site. Due to time constraints, only a representative sample of the collection was photographed (Figures 17-21). This consisted primarily of those specimens arranged in frames and displays; numerous unsorted specimens in coffee cans and other containers were not photographed, although they were cursorily examined.

Figure 17. Overview of a portion of the Ed Moran artifact collection.

Figure 18. Close-up of parallel-oblique flaked lanceolate point base (lower right), notched point (upper left), biface (upper right), and Knife River flint flake (lower left) from Moran Collection.

Figure 19. Close-up of bifaces, end scraper, ceramic bead/unglazed marble (white arrow), triangular unnotched, side-notched, and lanceolate (red arrows) projectile points from Moran Collection.

Figure 20. Close-up of select small corner- and side-notched projectile points from the Moran Collection.

Figure 21. Close-up of interior portion of a refit ceramic vessel from the Moran Collection.

The collection consists of a wide variety of lithic tools and detritus and aboriginal ceramics, although the former far outnumber the latter. The collection of unframed specimens consists, almost entirely, of lithic debitage; however, a small selection of natural pebbles was also observed among the pieces examined. In terms of lithic raw material types observed in the debitage collection, Red River chert and Swan River chert were the most prevalent of the recognized local materials. Knife River flint represents the only exotic material type observed in the collection; a small number of specimens of this material type were noted.

Lithic tools observed in the collection consist of a variety of bifacial and unifacial chipped specimens, including end scrapers, knives, a graver, and projectile points (see Figures 17-20). The variation among projectile points in the collection is considerable given the sample size. A number of small, side-notched, corner-notched, and triangular unnotched points were observed (see Figure 20), as were a few larger notched pieces (see Figure 18, upper left) and two heavily resharpened lanceolate points (see Figure 19). Both lanceolate specimens were reportedly collected from an area currently designated as site 21RLi (Ed Moran, personal communication 2012; see page 126, below). Based on the style of projectiles observed in the collection and the history of the area from which the majority were obtained, it is very likely that they represent a nearly continuous occupation of the landscape from late Paleoindian through post-contact times.

The limited ceramics in the collection consist of small, undecorated, cord-impressed, grit-tempered bodysherds (see Figure 17, lower right corner). These specimens were all reportedly collected from an area now designated site 21RL28 (Ed Moran, personal communication 2012; see pages 83 and 93, below). However, the collection also contains a refit portion of a larger vessel with both rim and bodysherds present (see Figure 21). The refit specimen has a light reddish/buff-colored exterior and interior surface and is grit-tempered. It exhibits a smoothed-over surface treatment, both on the interior and exterior of the vessel. The rim is primarily straight or very slightly outward flaring in profile. The lip is unthickened, unflattened, and undecorated. The vessel appears to be thickest in the rim/body junction (approximately 7 mm), whereas the body and lip measure approximately 5 mm in thickness. Decoration is limited to a single horizontal row of four deep, slightly oblong punctates at the upper neck/lower rim transition on the interior surface of the vessel. Spacing between the punctates is not uniform and there appear to be two sets of two rather than a continuous line. Approximately 6-7 mm separates the grouped punctates from each other, while approximately 15 mm separates the two groups. The characteristics of this vessel are most similar to a number of Middle Woodland types documented in Minnesota, North Dakota, and South Dakota that exhibit single rows of punctates or bosses (Craig M. Johnson, Archaeologist, personal communication 2012). Artifacts collected by Moran from site 21RL1 are described on pages 38 and 39, below.

FIELD METHODOLOGY

Fieldwork activities were conducted in multiple sessions between June 16 and October 12, 2012. Investigations consisted of complementary archeological and geomorphological components. The geomorphic study is the subject of the following chapter. The archeological component was conducted over the course of two 10-day field sessions and two 5-day field sessions. As was previously mentioned (see page 3), the RFP called for a combination of probabilistic and non-probabilistic methodology in the survey parcel selection process, although it was stressed that the focus should primarily be directed towards the maximization of previously undocumented site discovery (see Appendix A). It was initially felt that at least some degree of random sampling would be ideal. However, it soon became apparent that, due to a number of factors such as landowner permission, crop harvest schedule, weather, and time, a random sampling strategy would be too cumbersome to effectively and efficiently employ while adhering to the primary objective of maximizing site discovery. Instead, the process of selecting survey parcels focused more on attempts to target a variety of different landform settings in areas of high, medium, and low modeled site potential within the county.

Selected land parcels within the project area were investigated by means of a 100-percent intensive pedestrian survey utilizing parallel, linear transects spaced at approximately 20-m intervals or less. In areas of reduced visibility, or where sites had been previously recorded or reported, survey transects were narrowed to 15-m intervals or less. The surface investigation was further augmented by the examination of rodent burrows and backdirt piles, road cuts, cutbank exposures, and gravel bars in instances where such features were present. In select cases, a local area collector accompanied ALAC personnel into the field to identify the locations from which he had collected artifacts in the past. In two of these areas, field crews were not able to identify any additional cultural material in the field. The areas were, nevertheless, recorded, and alpha numbers were subsequently assigned to the sites.

Standardized documentation procedures were utilized during field investigations. Digital photographs were obtained for overviews of each site, as well as for any specific features identified. The position of each artifact and cultural feature observed was demarcated with high-visibility pin flags, and site boundaries were then recorded with the use of a Trimble *Pro XR*® model, differentially corrected sub-meter accuracy GPS unit. All features and diagnostic artifacts also were individually plotted with the GPS, as were the boundaries of all land parcels examined. These data were subsequently plotted on 1:24,000-scale topographic quadrangle maps and 1:10,000-scale aerial orthoimagery maps.

Descriptions of documented cultural resources along with general environmental descriptions of each land parcel were recorded in field journals, including: artifact specimen inventories identifying type, modification, raw material utilized, and count; additional site feature descriptions and measurements; and general environmental descriptions of each site area. In most instances, cultural material documented was left in situ; only those artifacts determined to hold culturally or functionally diagnostic value were collected. Minnesota archeological site forms were completed for all cultural resources identified or revisited within the project area (see Appendix B).

Laboratory analyses of recovered/loaned cultural material were conducted between October and December of 2012. Standardized procedures aimed at the production of readily comparable datasets were utilized in the analyses. Diagnostic artifacts were subjected to both macroscopic and microscopic identification procedures for the purposes of determining material typology, manufacture techniques, use-wear patterning, and source material locations. Representative samples of lithic and ceramic material were photographed. Artifact specimens were subjected to various suites of dimensional measurements based upon ascribed individual typology, and technical descriptions were provided. Diagnostic artifacts collected from the field were returned to property owners following laboratory analysis. Soil matrix from five deep soil cores was sieved through $^{1}/_{8}$-inch wire mesh screen following analysis by the project geomorphologist. Organic carbon samples obtained from identified paleosols in the study area were submitted to the Illinois State Geological Survey for radiocarbon assay. The uncalibrated radiocarbon dates for each sample were subsequently calibrated (see Appendix C).[1] The radiocarbon dates are addressed in greater detail in Chapter 6.

DOCUMENTED ARCHEOLOGICAL PROPERTIES

Archeological field investigations in the study area resulted in the identification and documentation of 24 previously unrecorded archeological properties (Table 6). Two of the 24 documented sites were reported by local informants but due to the lack of access permission and ground surface visibility issues, no additional artifacts were observed in these localities by field personnel. These two areas were assigned alpha numbers instead of standard trinomial numbers. Nine, previously recorded/reported site areas, or portions thereof, were also revisited during the course of the study. This brings the total number of confirmed sites in the county to 30 and the total number of alpha sites to 18. Both previously recorded/reported sites (see Tables 3 and 4) and newly identified properties are discussed below.

Table 6. Previously Unrecorded Archeological Sites Documented During the Current Study.

Site Number	Cultural Affiliation (Context)	Site Type	Archaeological Subregion	Notes/ Comments
21RL9	Woodland	Artifact Scatter/ Habitation	7w	Just south of 21RL6
21RL10	Woodland	Artifact Scatter	6n	Northwest of 21RL1
21RL11	Prehistoric	Artifact Scatter	6n	In 21RLi boundary
21RL12	Prehistoric	Artifact Scatter	6n	In 21RLi boundary
21RL13	Prehistoric	Lithic Scatter	6n	Just north of 21RLi
21RL14	Prehistoric	Lithic Scatter	6n	
21RL15	Prehistoric	Lithic Scatter	6n	
21RL16	Prehistoric	Lithic Scatter	6n	
21RL17	Prehistoric	Artifact Scatter	6n	
21RL18	Prehistoric	Lithic Scatter	6n	
21RL19	Prehistoric	Lithic Scatter	6n	
21RL20	Prehistoric	Lithic Scatter	6n	
21RL21	Prehistoric	Lithic Scatter	7w	
21RL22	Woodland & Post-contact	Artifact Scatter	6n	
21RL23	Prehistoric	Lithic Scatter	6n	
21RL24	Prehistoric	Lithic Scatter	7w	
21RL25	Prehistoric	Single Artifact	7w	

[1] Dates are herein reported in two manners: as uncalibrated radiocarbon (^{14}C) dates – labeled as *Radiocarbon Years Before Present*, or *RCYBP*; and as dates calibrated from CALIB 6.0 and the IntCal09 calibration curve (Reimer et al. 2009) – labeled as *Calibrated Years Before Present*, or *cal B.P.* For all purposes, the term *Present* denotes the calendar year A.D. 1950.

Table 6 (continued).

Site Number	Cultural Affiliation (Context)	Site Type	Archaeological Subregion	Notes/ Comments
21RL26	Prehistoric	Lithic Scatter	6n	
21RL27	Prehistoric	Single Artifact	6n	
21RL28	Woodland	Artifact Scatter	6n	Identified by local collector
21RL29	Prehistoric (possible late Woodland)	Artifact Scatter	6n	Identified by local collector
21RL30	Prehistoric	Single Artifact	6n	In 21Rla boundary
21RLq	Prehistoric	Lithic Scatter	6n	Reported – site not surveyed
21RLr	Prehistoric	Lithic Scatter	6n	Surveyed – no artifacts discovered

Site 21RL1 (Red Lake River Mounds)

Site Number: 21RL1 (21RLo)	**Site Name:** Red Lake River Mounds
Site Type/Function: Burial Mound/Lithic Scatter	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge	**Site Area (ac):** 27.04
Elevation Above Mean Sea Level (ft): 1,010	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Woodland (possible Laurel & Transitional; confirmed Late Woodland)	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Marcoux Corners (1982) & Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL1 (Figures 22 and 23) was initially recorded in 1886 by Theodore H. Lewis. The site was described as a group of six mounds in a north-south alignment (Figure 24) on the east bank of the Red Lake River (Lewis 1886; Wilford 1941; Winchell 1911:362). Lewis (1886) noted that the mounds were about 250 yards from the Red Lake River and about 60 feet above it on a natural ridge. The natural ridge Lewis reported is a beach of Glacial Lake Agassiz (Wilford 1941). Mounds 1-4 were connected by a continuous embankment. The measurements of the mounds as recorded by Lewis (1886) are presented in Table 7. Both Mounds 2 and 4 had flat tops that were smaller in diameter than their bases. Lewis also noted that Mound 1 had been excavated and Mound 6 was under cultivation (Lewis 1886; Wilford 1941).

The University of Minnesota excavated three of the mounds in 1936 under the direction of A. H. Jenks with L. A. Wilford as field supervisor (Arzigian and Stevenson 2008; Wilford 1941). At that time, the southernmost mound (Lewis Mound 6) and most of the embankment connecting the four northernmost mounds had disappeared (Wilford 1941). The University group renumbered the mounds from south to north and excavated Mounds 1-3 (Lewis numbers Mounds 5-3). Human bones most likely representing secondary burials, or primary burials heavily disturbed by animals, were found in all three of the mounds. Artifacts recovered included lithic flakes, grit-tempered ceramic sherds, animal bone, projectile points, knives, scrapers, a small maul, a perforated bone, an elk antler haft, a deer handle/beaver tooth chisel, an elk antler cone-shaped plug, a cross-shaped shell pendant, shell beads (including 319 small snail shell beads), and unmodified clam shells (Wilford 1941).

In 1952, Wilford indicated in a memo that he had revisited the Red Lake River Mounds and noted that a large gravel pit had been opened between the mounds and the road. He also noted that someone had used a scraper to gut the center of each of the mounds. He observed human bones scattered around the two biggest mounds.

Location Information Edited

FIGURE 22

Location Information Edited

FIGURE 23

Table 7. Site 21RL1 Mound Measurements (from Lewis 1886).

Mound No.	Diameter at Base (ft)	Diameter at Top (ft)	Height (ft)
1	82.0	82.0	9.0
2	84.0	48.0	5.5
3	56.0	46.0	3.5
4	70.0	34.0	3.0
5	*60.0 x 35.0	*60.0 x 35.0	3.0
6	30.0	30.9	1.5

*** elliptical N-S x E-W**

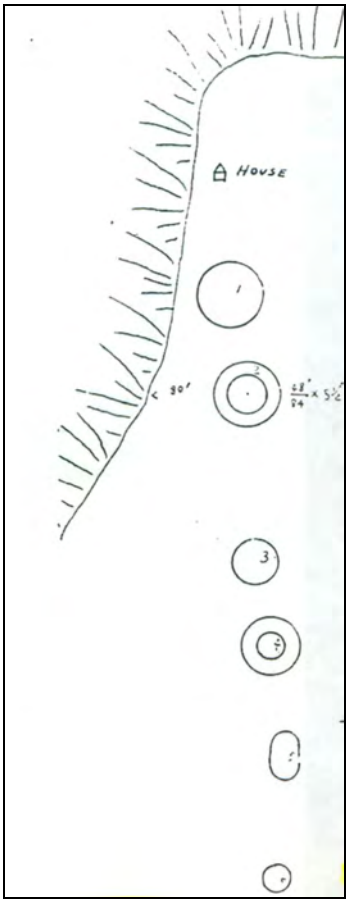


Figure 24. Sketch map of Red Lake River mound group (from Winchell 1911:362).

Description

ALAC revisited the 21RL1 site area on June 15, 2012. At the time of the investigation, the area in which artifacts were recorded was in a cultivated field with a black sandy, silt loam soil (Figure 25). Ground surface visibility was 80 percent. The mounds would likely have originally been located atop the ridge in the plowed field; however, this could not be confirmed and no evidence of mounds was observed due to repeated cultivation of the area. Just west of the field in a wooded area near the river, a large portion of the beach ridge has been destroyed from borrowing activities.

Over 300 artifacts, primarily lithic flakes, are scattered across the cultivated portion of the site surface. Lithic raw materials noted in this area include quartz, quartzite, silicified wood, chalcedony, and chert. One red chert scraper, fire-cracked rock (FCR), and shell fragments were also observed.

A sample of lithic materials previously collected from site 21RL1 by area resident Ed Moran includes local Red River and Swan River cherts. The collection was examined and photographed by ALAC on October 9, 2012 (Figure 26). The sample of lithic material types noted in the collection closely mirrors that observed in the field.

Figure 25. Overview of site 21RL1 from the northern end, southern orientation.

Figure 26. Sample of lithic materials from site 21RL1 in private collection of Ed Moran.

In addition to conducting the pedestrian survey and examining artifacts from the site in the Moran Collection, a 1-m-resolution bare earth digital elevation model (DEM) of the area, generated from LiDAR data, was also examined (Figure 27). Nothing on the DEM, either within or around the site boundary, was clearly suggestive of a mound feature. However, the top of the beach ridge, upon which the mounds were originally reported to have been located, has been so intensively cultivated that any evidence of a mound superstructure is likely to have been destroyed. Couple this with previously documented disturbance to the features from road construction, excavation, and looting, and it is not difficult to understand why the features would no longer be visible surficially.

To the west of the field, the wooded area near the river bank is now marred by large craters that are the result of past borrowing activities. This disturbance is clearly visible on the DEM and a second borrow pit is also visible further south and west along the beach ridge remnant (see Figure 27). If the mounds were actually located along this area west and southwest of the current site boundary, then the likelihood of the features having been destroyed is extremely high. The borrow pit areas were investigated as part of the current pedestrian survey and as part of the geoarcheological study; however, no additional artifacts and no evidence of mounds or human remains were observed at the time.

Location Information Edited

FIGURE 27

Site 21RL2 (Boyle Mounds)

Site Number: 21RL2	**Site Name:** Boyle Mounds
Site Type/Function: Mound	**Legal Location:** Edited
Landscape Position: Upland	**Site Area (ac):** Unknown
Elevation Above Mean Sea Level (ft): 970	**(Re)visited by ALAC?:** No
Cultural Affiliation: Unknown	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL2 was initially documented by Eldon Johnson in 1960. The site had been reported to him by a staff member of the University of Minnesota, Northwest School of Agriculture in Crookston. Two small mounds were located in a poplar grove on the Boyle farm (Figures 28-30). Mr. Boyle also showed the archeologists where the Pembina Trail crossed his land from east to west, approximately 30-40 m north of the mounds (Johnson 1973b). The site had never been cultivated or disturbed prior to the excavation of both mounds by Johnson and his crew (Figure 31). The east mound, designated Mound 1, was described as oblong with estimated dimensions of 4.0 m north-south by 3.0 m east-west and 0.5 m in height; Mound 2 was roughly 4 m in diameter and 0.5 m high (Johnson 1973b). No human remains were encountered during the excavation of the mounds. Mound 1 contained scattered charcoal fragments and a shallow, basin-shaped pit stain; Mound 2 also had scattered charcoal and three small unidentifiable bone fragments (Arzigian and Stevenson 2003:479; Johnson 1961, 1973b).

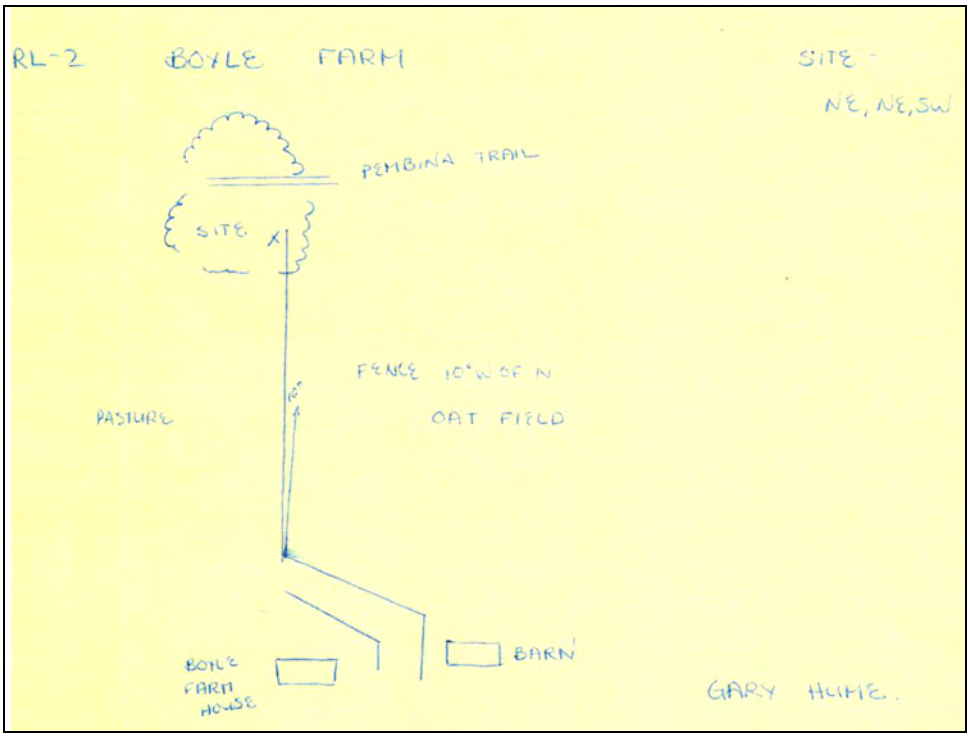


Figure 28. Sketch map of site 21RL2 in relation to the farmhouse and the Pembina Trail (from Johnson 1973b).

Description

ALAC did not revisit site 21RL2 during the current study.

Location Information Edited

FIGURE 29

Location Information Edited

FIGURE 30

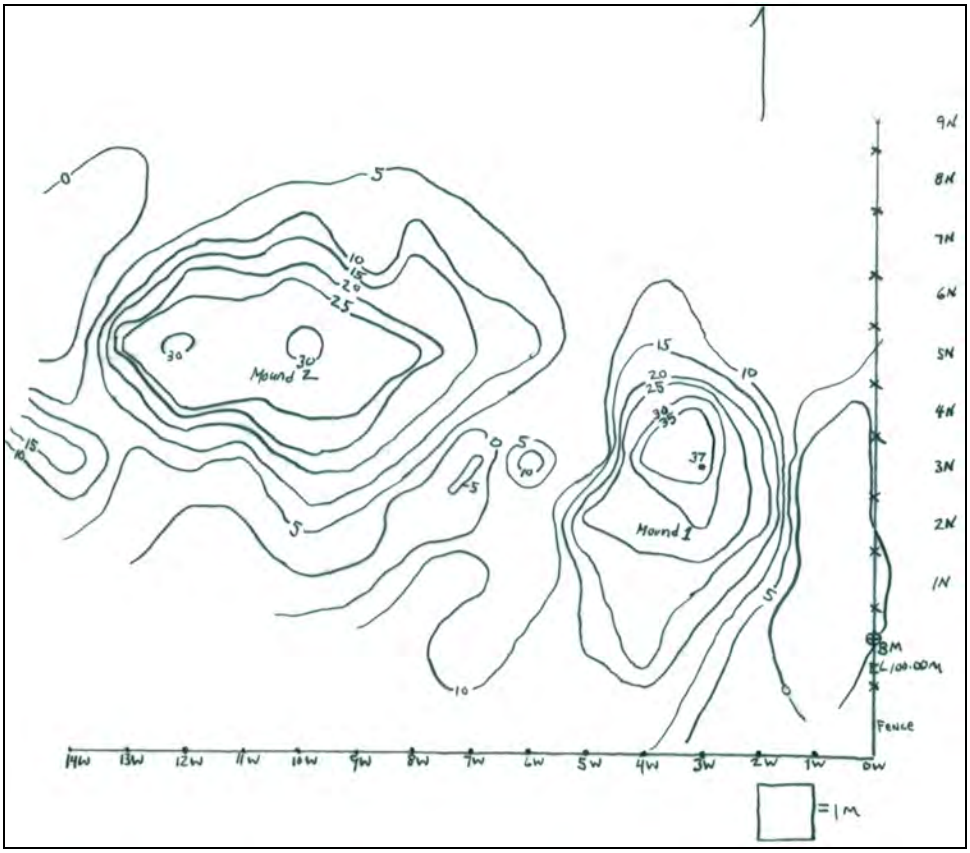


Figure 31. Contour map of Mounds 1 and 2, site 21RL2 (adapted from map in 21RL2 site file).

Site 21RL3 (Sportsman's Park)

Site Number: 21RL3	**Site Name:** Sportsman's Park
Site Type/Function: Habitation/Artifact Scatter	**Legal Location:** Edited
Landscape Position: Upland Terrace	**Site Area (ac):** 12.47
Elevation Above Mean Sea Level (ft): 975	**(Re)visited by ALAC?:** No
Cultural Affiliation: Woodland (possible Blackduck)	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL3 (Figures 32 and 33) was initially documented in 1973 by the University of Minnesota during a survey along the Red Lake River for a proposed U.S. Army Corps of Engineers dam and reservoir project (Streiff and Roney 1973). Surface materials including a projectile point, lithic debitage, unidentifiable bone, and ceramics (tentatively identified as Blackduck) were noted. Subsurface tests, conducted at the time, yielded no additional cultural materials (Streiff and Roney 1973:5-7).

Description

ALAC did not revisit site 21RL3 during the current study because, although the topographic map depicts the site boundaries within Sportsman's Park, there are currently fences erected on the east edge of the road and private residences were visible beyond. ALAC was unsuccessful in acquiring landowner permission from these residents.

Location Information Edited

FIGURE 32

Location Information Edited

FIGURE 33

Site 21RL4 (Watson Burials)

Site Number: 21RL4	**Site Name:** Watson Burials
Site Type/Function: Cemetery	**Legal Location:** Edited
Landscape Position: Terrace	**Site Area (ac):** 0.41
Elevation Above Mean Sea Level (ft): 1,037	**(Re)visited by ALAC?:** No
Cultural Affiliation: Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL4 was documented in 1988 by a crew from the Minnesota OSA (see Figures 32 and 33). Slumping along the north bank of the Clearwater River in Red Lake Falls exposed historic-period coffins. The site survey card file of the Archaeology Laboratory, University of Minnesota lists Alan Merkin and the Red Lake County Sheriff as informants. The card file also notes that Grant Goltz conducted soil coring at the site. The OSA crew salvaged the burials of a mother and daughter from the site. Margaret Watson, daughter of John and Amanda, age 1 year 6 months, died on November 17, 1885. Mother Amanda Watson died of cancer on April 12, 1891 (notes in site file at the OSA).

Description

ALAC did not revisit site 21RL4 during the current study.

Site 21RL5 (Bakke)

Site Number: 21RL5	**Site Name:** Bakke
Site Type/Function: Lithic Scatter & Historic Dump	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.10
Elevation Above Mean Sea Level (ft): 1,140	**(Re)visited by ALAC?:** No
Cultural Affiliation: Prehistoric & Euroamerican	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Oklee (1971)	**Archaeological Subregion:** 6n

Research History

Site 21RL5 was documented in 1994 by the Institute for Minnesota Archaeology (Breakey et al. 1994). Located north of Oklee along an old railroad grade, the site was discovered in a cultivated field near a meander scar south of the Lost River (Figures 34 and 35). A large scatter of historic artifacts was observed in the field, as were three pieces of lithic debitage. The historic materials consisted of approximately 50 percent whiteware, 40 percent bottle glass, and 10 percent metal fragments and miscellaneous items such as a door hinge, a large wire nail, and a leather shoe (Breakey et al. 1994:63). No evidence of structural remains was noted; however, as pointed out above, the site is located along an old railroad grade. The scatter of historic-period material was interpreted as a mid-twentieth century dump site (Breakey et al. 1994:63). The lithics consisted of two pieces of tested chert and one flake of Swan River chert (Breakey et al. 1994:63).

Although the site is described as a large scatter of historic artifacts, the map included in the site file identifies two small, distinct areas separated by approximately 156 m rather than one larger site boundary. It is uncertain whether the site did, indeed, consist of two separate loci, or whether the points were demarcating the extent of a larger area. Because of the uncertainty, the site is mapped here as two distinct points, as it is in the site file (see Figures 34 and 35).

Description

ALAC did not revisit site 21RL5 during the current study.

Location Information Edited

FIGURE 34

Location Information Edited

FIGURE 35

Site 21RL6 (Wicks)

Site Number: 21RL6	**Site Name:** Wicks
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.10
Elevation Above Mean Sea Level (ft): 1,150	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Oklee (1971)	**Archaeological Subregion:** 6n

Research History

Site 21RL6 was documented in 1994 by the Institute for Minnesota Archaeology (Breakey et al. 1994). The site is located in a cultivated field along a meander scar north of the Lost River (see Figures 34 and 35). The site consists of a single core of Red River chert (Breakey et al. 1994:63). Eighteen shovel tests were excavated in the vicinity of the site to an average depth of 40 cmbs; all were negative for cultural materials.

Description

ALAC conducted a pedestrian survey of 126 ac of land within and around the previously recorded site 21RL6 locale on June 17, 2012. At the time of the investigation, the site area was located in a cultivated cornfield that afforded approximately 70 percent ground surface visibility (Figure 36).

No additional artifacts were observed in the immediate vicinity of the site; however, another prehistoric site, subsequently designated 21RL9, was documented approximately 337 m south-southwest of the previously recorded 21RL6 site area (see page 56, below).

Figure 36. Overview of the 21RL6 site area, southeastern orientation.

Site 21RL7 (Seeger)

Site Number: 21RL7	**Site Name:** Seeger
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.10
Elevation Above Mean Sea Level (ft): 1,120	**(Re)visited by ALAC?:** No
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL7 was documented in 1990 by the Institute for Minnesota Archaeology (Johnson 1990). The site is located on a west-facing gently sloping terrace overlooking the left bank of the Red Lake River to the north (Figure 37; see Figure 32). The site consists of a single fragment of a yellow jasper retouched flake or proximal portion of a scraper (Johnson 1990). Eight shovel tests were excavated in the immediate site area and an additional 13 tests were excavated along a transect line both to the southeast and the northwest of the site. All tests were negative for cultural materials (see Johnson 1990:Figure 2).

Description

ALAC did not revisit site 21RL7 during the current study.

Location Information Edited

FIGURE 37

Site 21RL8

Site Number: 21RL8	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.10
Elevation Above Mean Sea Level (ft): 1,115	**(Re)visited by ALAC?:** No
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Plummer (1976)	**Archaeological Subregion:** 7w

Research History

Site 21RL8 was documented in 2008 by the 106 Group, Ltd. (Doperalski and Van Vleet 2008). The site is located on a slightly undulating terrace just to the east of, and overlooking, the Clearwater River just north of Plummer (Figures 38 and 39). At the time of the survey, the area was covered in tall grass, affording less than 5 percent ground surface visibility. As a means of augmenting the poor visibility, a series of 31 shovel tests was excavated on the terrace. Of the 31 tests, which were excavated to an average depth of 65 cmbs, one was positive. The positive test, No. 10, yielded three pieces of shatter and two tertiary flakes of Swan River chert at a depth of between 15 and 35 cmbs (Doperalski and Van Vleet 2008:15). Two additional shovel tests were excavated at 5-m intervals to the south and west of the positive test. Neither of the additional tests contained cultural material (Doperalski and Van Vleet 2008:15).

It is possible that the site extends to the north and east outside of the survey area boundary; however, it was recommended by the 106 Group that the known portion of site 21RL8 be considered not eligible for listing in the NRHP (Doperalski and Van Vleet 2008:15).

Description

ALAC did not revisit site 21RL8 during the current study.

Location Information Edited

FIGURE 38

Location Information Edited

FIGURE 39

Site 21RL9

Site Number: 21RL9	**Site Name:**
Site Type/Function: Artifact Scatter/Habitation	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.46
Elevation Above Mean Sea Level (ft): 1,130	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Woodland	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Oklee (1971)	**Archaeological Subregion:** 7w

Research History

Site 21RL9 was not documented prior to the current investigation.

Description

ALAC recorded site 21RL9 on June 17, 2012. The site is a prehistoric artifact scatter located on the north bank of a meander scar of the Lost River (see Figures 34 and 35). The Lost River is currently located approximately 35 m southeast of the site. Site 21RL9 is located south of the railroad tracks and approximately 337 m south-southwest of previously recorded site 21RL6. At the time of the investigation, the site area was a cultivated field that afforded approximately 35 percent ground surface visibility (Figure 40).

Figure 40. Overview of site 21RL9, southeastern orientation.

Eighteen artifacts were documented in association with site 21RL9 during the current study (Table 8). Specimens inventoried include four tertiary reduction flakes, two pieces of fire-cracked rock, one end scraper, two ceramic bodysherds, two projectile points, and seven animal bone fragments. The four long bone fragments are too small and degraded to allow for positive identification; however, the scapula fragment, distal metapodial, and cuboid are all from a bovid. Unfortunately, it was not possible to classify these elements more specifically, so it remains uncertain whether they derived from a cow or a bison. No evidence of cultural modification was observed on any of the specimens. The pottery and projectile points were collected for further analysis but, at the request of the property owner, will be returned following completion of the project.

The bodysherds (Specimens RC-1-1 and RC-1-2) are grit-tempered and exhibit cord-impressed exterior surface treatments (Figures 41 and 42). The interior surface is smooth on both specimens. The exterior surface on both specimens is a strong brown color, while the interior surface on each is a light buff color. No decorative motifs were observed on either the interior or exterior surfaces of the specimens. Specimen RC-1-1 measures 6.6 mm in maximum thickness, while Specimen RC-1-2 measures only 4.5 mm in maximum thickness. Specimens RC-1-1 and RC-1-2 exhibit characteristics most closely associated with Woodland-period ceramic vessels; however, a more detailed level of classification, such as to a particular ware, would be largely conjectural given the present sample set.

Table 8. Artifacts Documented at Site 21RL9.

Documented Specimen Description	Quantity Identified
Animal long bone fragment – small and unidentifiable	4
Animal bone fragment – scapula, large mammal	1
Animal bone fragment – cuboid, large mammal	1
Animal bone fragment – distal metapodial, large mammal	1
Swan River chert side-notched projectile point – light gray-colored (collected)	1
Knife River flint corner-notched projectile point – dark brown-colored (collected)	1
Chert tertiary flake – gray, white, olive, and brown-colored	4
Ceramic bodysherd – strong brown-colored (collected)	2
Fire-cracked rock	2
Chert end scraper – gray-colored	1

Figure 41. Ceramic bodysherd (Specimen RC-1-1) collected from site 21RL9.

Figure 42. Ceramic bodysherd (Specimen RC-1-2) collected from site 21RL9.

The two projectile points collected were labeled Specimens RC-1-3 and RC-1-4. Specimen RC-1-3 (Figure 43) was produced on a light gray-colored piece of Swan River chert. It measures 24.8 mm in maximum length, 22.2 mm in maximum width, and 5.3 mm in maximum thickness. The specimen is side-notched and tabular in cross-section. The overall blade length is very short, measuring 17.4 mm, and the blade margins are asymmetrical. These characteristics are suggestive of heavy resharpening and converted use of the specimen as a cutting tool.

Specimen RC-1-4 (Figure 44) was produced on a dark brown-colored piece of Knife River flint. It measures 81.0 mm in maximum length, 33.0 mm in maximum width, and 6.2 mm in maximum thickness. The specimen is corner-notched and tabular in cross-section. The overall blade length measures 70.4 mm and the blade margins are largely symmetrical,

Figure 43. Projectile point (Specimen RC-1-3) collected from site 21RL9.

although one lateral margin exhibits a much higher concentration of fine pressure retouch. A small fracture has removed one of the ears on the proximal end of the piece; otherwise, the specimen is complete.

Figure 44. Projectile point (Specimen RC-1-4) collected from site 21RL9.

The presence of ceramics, FCR, faunal remains, and multiple utilitarian tools, coupled with the proximity of the Lost River, suggests that site 21RL9 represents the remnants of at least a portion of a habitation area. The artifact assemblage suggests that the site was inhabited by a Woodland-period culture group, although the specific timeframe and duration of occupation during the Woodland period remain in question.

Site 21RL10

Site Number: 21RL10	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 16.98
Elevation Above Mean Sea Level (ft): 950	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Woodland	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL10 was not documented prior to the current investigation.

Description

ALAC recorded site 21RL10 on June 18, 2012. The site, which is located approximately 160 m northwest of site 21RL1, is a large prehistoric artifact scatter located on a low terrace adjacent to the left bank of the Red Lake River (see Figures 22 and 23). An old stream channel is located immediately north of the site. The terrace is nearly level and lies approximately 15 ft above the present river channel. At the time of the investigation, the site area was a cultivated soybean field that afforded approximately 85 percent ground surface visibility (Figure 45).

Figure 45. Overview of site 21RL10, northeastern orientation.

A total of 78 artifacts were documented across the surface of site 21RL10 during the current investigation (Table 9). Specimens inventoried include 60 pieces of lithic reduction detritus, six pieces of FCR, one end scraper, six ceramic bodysherds, one projectile point, one bifacially worked chopping tool, and three expended cores. Reduction detritus identified in the field consists of primary, secondary, and tertiary flakes, as well as other pieces of shatter. A variety of material types was observed among the lithics, the majority of which appear to derive from local till deposits. Not surprisingly, this composition of material types closely mirrors that observed from nearby site 21RL1 (see pages 38 and 39, above). No notable exotic material types were observed.

The projectile point and three pieces of pottery were collected for further analysis but will be returned to the landowner following completion of the project. The collected projectile point was labeled Specimen RC-2-1. Specimen RC-2-1 (Figure 46) is a small, side-notched base and mid-section from which the distal tip has been removed by a transverse fracture. It is roughly lenticular in cross-section. The specimen was produced on a light gray-colored piece of chert and several tiny, dark-colored specks of algae are evident

Table 9. Artifacts Documented at Site 21RL10.

Documented Specimen Description	Quantity Identified
Chert projectile point – light gray-colored (collected)	1
Chert core – mottled pinkish white, gray, & white-colored	3
Quartzite bifacially worked chopper – grayish green-colored	1
Quartzite end scraper – white-colored	1
Quartz primary flake – pinkish white-colored	1
Chert primary flake – gray, black & red-colored	3
Chert secondary flake – gray & brown-colored	2
Quartzite secondary flake – grayish green-colored	1
Chert tertiary flake – white, gray, brown, red, black, & yellow-colored. One specimen with retouch.	37
Quartzite tertiary flake – black, gray, red, pinkish white, & grayish green-colored	7
Silicified sediment tertiary flake – grayish red-colored	1
Silicified wood tertiary flake – brown-colored	1
Chert shatter – gray, red, & yellowish brown-colored	5
Quartzite shatter – white-colored	2
Ceramic bodysherd – light gray-colored (collected)	1
Ceramic bodysherd – reddish orange-colored (collected)	1
Ceramic bodysherd – black-colored (collected)	1
Ceramic bodysherd – grayish brown & black-colored	2
Ceramic bodysherd – reddish orange-colored	1
Fire-cracked rock	6

across the surface. It measures 17.0 mm in maximum length (broken), 14.9 mm in maximum width, and 4.0 mm in maximum thickness. A step fracture, visible on the obverse face, extends proximally from the distal end of the piece for a distance of 3.0 mm. This type of fracture is consistent with impact damage observed on other lithic projectiles, and the size of the specimen is characteristic of bow technology.

Figure 46. Projectile point (Specimen RC-2-1) collected from site 21RL10.

Three of the six ceramic bodysherds identified at the site were collected. Three specimens were not collected because they were extremely small (< 5.0 mm on average) and delaminated. All of the collected specimens (RC-2-2, RC-2-3, and RC-2-4) exhibit a cord-impressed exterior surface treatment (Figures 47-49), although the surfaces of Specimens RC-2-2 and RC-2-3 appear to have been smoothed-over. Specimen RC-2-2 is light gray-colored, tempered with large (4.0-5.0-mm-diameter) pieces of feldspar, has a smooth interior surface, and exhibits no decorative motifs. It measures 6.5 mm in thickness. Specimen RC-2-3 is reddish orange-colored, grit-tempered, has a smooth interior surface, and exhibits no decorative motifs. It measures 3.3 mm in thickness. Specimen RC-2-4 is black-colored, sand-tempered, has a smooth, lightly brushed interior surface, and exhibits no exterior decorative motifs. It measures 3.7 mm in thickness. Classification of these specimens to a particular ware level would be largely conjectural at this juncture, although they do, broadly speaking, display Woodland-like characteristics.

Figure 47. Ceramic bodysherd (Specimen RC-2-2) collected from site 21RL10.

Figure 48. Ceramic bodysherd (Specimen RC-2-3) collected from site 21RL10.

Figure 49. Ceramic bodysherd (Specimen RC-2-4) collected from site 21RL10.

Site 21RL11

Site Number: 21RL11	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: Bluff top	**Site Area (ac):** 4.4
Elevation Above Mean Sea Level (ft): 955	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Undetermined	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL11 was not documented prior to the current investigation; however, it is located within the larger confines of alpha site 21RLi, the reported location of a small prehistoric artifact scatter originally collected by the landowner, Mr. Drew Larson (Streiff and Roney 1973:3). Though archeologists did survey the area containing this site in the early 1970s, no cultural material was observed (Streiff and Roney 1973:3).

Description

ALAC recorded site 21RL11 on June 15, 2012. The site is an artifact scatter located on a bluff top overlooking the right bank of the Red Lake River to the south (Figures 50-52). It is located only approximately 90 m southwest of site 21RL12 (see below). The site locality was identified by the landowner, Mr. Drew Larson. At the time of the investigation, the site area was in pasture that afforded approximately 25 percent ground surface visibility (see Figure 50). Although the site area has not been farmed for approximately 15 years, the topsoil is completely eroded from previous cultivation. The extent of Mr. Larson's collection from the site area consists of three grooved mauls and between four and six flakes (Drew Larson, landowner, personal communication 2012). Only two pieces of FCR were documented within the site area during the current investigation. These specimens were not collected.

Figure 50. Overview of site 21RL11, southern orientation.

Location Information Edited

FIGURE 51

Location Information Edited

FIGURE 52

Site 21RL12

Site Number: 21RL12	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: Bluff top	**Site Area (ac):** 4.99
Elevation Above Mean Sea Level (ft): 955	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL12 was not documented prior to the current investigation; however, it is located within the larger confines of alpha site 21RLi, the reported location of a small prehistoric artifact scatter originally collected by the landowner, Mr. Drew Larson (Streiff and Roney 1973:3). Though archeologists did survey the area containing this site in the early 1970s, no cultural material was observed (Streiff and Roney 1973:3).

Description

ALAC recorded site 21RL12 on June 19, 2012. The site is a sparse artifact scatter located on the edge of a bluff overlooking the right bank of the Red Lake River to the east (see Figures 51 and 52). It is only approximately 90 m northeast of site 21RL11 (see above) and 250 m south of site 21RL13 (see below). At the time of the investigation, the site area was a soybean field that afforded approximately 50 percent ground surface visibility (Figure 53). The site was pointed out by the landowner. Mr. Larson has collected artifacts from this site in the past but could not recall specifically what had been discovered there.

Figure 53. Overview of site 21RL12, northeastern orientation.

During the current investigation, ALAC personnel documented a total of 18 prehistoric artifacts within the 21RL12 site boundary. Specimens identified include one gray-colored chert end scraper, one gray-colored chert expended core, one piece of gray-colored chert shatter, four gray-colored chert tertiary flakes, four white-colored chert tertiary flakes, four red-colored chert tertiary flakes, two pieces of FCR, and one unidentifiable animal bone fragment. No cultural material was collected from the site during the present study.

Site 21RL13

Site Number: 21RL13	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: Bluff Top	**Site Area (ac):** 0.02
Elevation Above Mean Sea Level (ft): 955	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Unknown	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL13 was not documented prior to the current investigation; however, it was identified only 60 m north of the previously defined 21RLi site boundary.

Description

ALAC recorded site 21RL13 on June 19, 2012. The site is a very sparse lithic scatter located on the edge of a bluff overlooking a meander scar on the right bank of the Red Lake River to the east (see Figures 51 and 52). It is located approximately 255 m north of site 21RL12. At the time of the investigation, the site area was a cultivated field planted to sugar beets. The field edge afforded approximately 55 percent ground surface visibility; however, visibility in the remainder of the field was limited to only 5 percent (Figure 54).

Figure 54. Overview of site 21RL13, southern orientation.

The site consists of two small, white-colored chert tertiary flakes. The flakes were not collected. It is likely that additional artifacts are present in and around the site area and that poor ground surface visibility simply precluded the survey crew from identifying more at the time of the investigation.

Site 21RL14

Site Number: 21RL14	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge	**Site Area (ac):** 1.50
Elevation Above Mean Sea Level (ft): 1,000	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL14 was not documented prior to the current investigation.

Description

ALAC recorded site 21RL14 on June 19, 2012. The site is a scatter of lithic artifacts located atop a glacial beach ridge overlooking the right bank of Brown Creek just upstream from its confluence with the Black River (Figures 55-57). Another small lithic scatter, site 21RL15, is located approximately 100 m to the southwest of this site (see below). The surrounding landform contains numerous intermittent drainages and very rocky glacial till. At the time of the investigation, the site area was a cultivated soybean field that afforded approximately 85 percent ground surface visibility (see Figure 55).

Figure 55. Overview of sites 21RL14 (background) and 21RL15 (foreground), north-northeastern orientation.

The site consists of 54 lithic artifacts including one end scraper, one proximal biface fragment, two cores, and 50 pieces of reduction detritus (Table 10). Artifact density was noted to be greater at the south end of the site. No diagnostic artifacts were observed and no material was collected from site 21RL14 during the current investigation.

Table 10. Artifacts Documented at Site 21RL14.

Documented Specimen Description	Quantity Identified
Chert biface fragment – mottled brown & red-colored (proximal half)	1
Chert end scraper – white-colored	1
Chert core – yellowish brown-colored (one expended)	2
Chalcedony primary flake – brown-colored	1
Quartz tertiary flake – gray-colored	1
Silicified sediment tertiary flake – gray-colored	1
Chert tertiary flake – gray, white, red, olive, & brown-colored (two specimens utilized)	38
Quartzite tertiary flake – gray-colored	1
Shatter	8

Location Information Edited

FIGURE 56

Location Information Edited

FIGURE 57

Site 21RL15

Site Number: 21RL15	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: Creek Valley Terrace	**Site Area (ac):** 0.28
Elevation Above Mean Sea Level (ft): 1,000	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL15 was not documented prior to the current investigation.

Description

ALAC recorded site 21RL15 on June 19, 2012. It is a sparse lithic scatter located atop a creek valley terrace just southwest of a relict glacial beach ridge. The site lies above the right bank of Brown Creek just upstream from its confluence with the Black River (see Figures 55-57). The creek bisects the beach ridge in a southwesterly direction. The site, located approximately 100 m southwest of site 21RL14, is in a cultivated field that afforded approximately 55 percent ground surface visibility at the time of the investigation.

ALAC personnel documented 15 pieces of lithic reduction detritus in association with site 21RL15. Cultural material observed includes four pieces of shatter, two primary reduction flakes, three secondary reduction flakes, and six tertiary reduction flakes (Table 11). No diagnostic artifacts were observed and no material was collected from the site during the current investigation.

Table 11. Artifacts Documented at Site 21RL15.

Documented Specimen Description	Quantity Identified
Chert primary flake – white-colored	1
Quartzite primary flake – pinkish gray-colored	1
Chert secondary flake – gray, white, & brown-colored	3
Chert tertiary flake – white & yellowish brown-colored	5
Silicified wood tertiary flake – brown-colored	1
Chert shatter – brown & white-colored	4

Site 21RL16

Site Number: 21RL16	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Bluff	**Site Area (ac):** 1.38
Elevation Above Mean Sea Level (ft): 1,075	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Plummer NW (1964)	**Archaeological Subregion:** 6n

Research History

Site 21RL16 was not documented prior to the current investigation.

Description

The site is located on level uplands near the edge of a bluff overlooking the right bank of the Red Lake River to the east (Figures 58-60). ALAC conducted a pedestrian survey of the site area on June 20, 2012. It was discovered in a cultivated cornfield that afforded approximately 60 percent ground surface visibility at the time of the investigation (see Figure 58). Site 21RL17 is located approximately 170 m northeast of this site.

Figure 58. Overview of site 21RL16, southern orientation.

Site 21RL16 is a sparse scatter of lithic debitage consisting of four artifacts. Artifacts documented include three gray-colored chert tertiary reduction flakes and one beige-colored chert tertiary reduction flake. No diagnostic artifacts were observed and no material was collected from the site during the current investigation.

Location Information Edited

FIGURE 59

Location Information Edited

FIGURE 60

Site 21RL17

Site Number: 21RL17	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: River Valley Bluffs	**Site Area (ac):** 4.16
Elevation Above Mean Sea Level (ft): 1,075	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Plummer NW (1964)	**Archaeological Subregion:** 6n

Research History

Site 21RL17 was not documented prior to the current investigation.

Description

Site 21RL17 is located on a slight rise near the edge of the bluff overlooking the right bank of the Red Lake River to the east (see Figures 59 and 60). ALAC conducted a pedestrian survey of the site area on June 20, 2012. It was discovered in a cultivated soybean field that afforded approximately 80 percent ground surface visibility at the time of the investigation (Figure 61). Site 21RL16 is located approximately 170 m southwest of this site, while site 21RL18 is located approximately 250 m to the northeast. A shallow, northwest-southeast-oriented intermittent drainage is located along the southern edge of the site.

Figure 61. Overview of site 21RL17, east-northeastern orientation.

Site 21RL17 is a scatter of 44 artifacts consisting, primarily, of lithic reduction detritus (Table 12). Although cultural material was recorded across an area exceeding four acres in size, the greatest concentration of material was identified on the south end of the site near the drainage cut that descends to the valley floor.

Table 12. Artifacts Documented at Site 21RL17.

Documented Specimen Description	Quantity Identified	Documented Specimen Description	Quantity Identified
Chert primary flake – off white-colored	1	Chert tertiary flake – gray-colored	22
Chert secondary flake – off white-colored	2	Chert tertiary flake – tan-colored	2
Chert tertiary flake – bluish gray-colored	1	Chert shatter – gray-colored	1
Chalcedony secondary flake – brown-colored	1	Chert tertiary flake – white-colored	4
Chalcedony secondary flake – white-colored	1	Chert shatter – white-colored	1
Chert secondary flake – tan-colored	2	Chert secondary flake – white-colored	1
Chert shatter – grayish tan-colored	1	Quartzite tertiary flake – pink-colored	1
Chert tertiary flake – off white-colored	2	Burned animal bone – unidentifiable	1

Site 21RL18

Site Number: 21RL18	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Bluff	**Site Area (ac):** 1.67
Elevation Above Mean Sea Level (ft): 1,070	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Plummer NW (1964)	**Archaeological Subregion:** 6n

Research History

Site 21RL18 was not documented prior to the current investigation.

Description

Site 21RL18 is located on an upland bluff edge along the right bank of the Red Lake River (see Figures 59 and 60). ALAC conducted a pedestrian survey of the site area on June 20, 2012. The site was discovered in a cultivated corn field approximately 250 m northeast of site 21RL17 and 650 m northeast of site 21RL16. A wooded riparian buffer is located along the river bank immediately east and north of the site; however, no cultural material was observed beyond the limits of the plowed field edge. The field afforded approximately 60 percent ground surface visibility at the time of the investigation (Figure 62).

Figure 62. Overview of site 21RL18, east-northeastern orientation.

The site is an ephemeral scatter of lithic detritus consisting of 10 artifacts, the majority of which are tertiary reduction flakes (Table 13). No diagnostic artifacts were observed and no material was collected from this site during the current investigation.

Table 13. Artifacts Documented at Site 21RL18.

Documented Specimen Description	Quantity Identified
Chert tertiary flake – red-colored	3
Chert tertiary flake – white-colored	2
Chert tertiary flake – dark gray-colored	1
Chert shatter – white-colored	3
Chert tertiary flake – gray-colored	1

Site 21RL19

Site Number: 21RL19	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Floodplain	**Site Area (ac):** 1.78
Elevation Above Mean Sea Level (ft): 1,050	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Plummer NW (1964)	**Archaeological Subregion:** 6n

Research History

Site 21RL19 was not documented prior to the current investigation.

Description

Site 21RL19 is located on a floodplain/point bar deposit along the right bank of the Red Lake River (see Figures 59 and 60). ALAC conducted a pedestrian survey of the site area on June 27, 2012. The site was discovered in an open pasture surrounded by trees (Figure 63). The mixed grass pasture afforded between 10 and 15 percent ground surface visibility at the time of the investigation. A large amount of bioturbation was observed throughout the field in the form of numerous small animal burrows. Additional disturbance, caused from the construction of a low earthen berm levee along the river bank, was also documented. A north-northwest-facing cutbank, located immediately adjacent to and above the river, runs along the northwestern edge of the site. The berm is built up along this area just above the cutbank.

In the berm directly above the cutbank in the northwestern portion of the site, one white and gray-colored chert tertiary flake and one tested pebble were discovered. A third artifact, a tertiary reduction flake of white-colored chert, was found in the field to the southeast. None of the material was collected.

Figure 63. Overview of site 21RL19, east-northeastern orientation.

Site 21RL20

Site Number: 21RL20	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 4.0
Elevation Above Mean Sea Level (ft): 945	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL20 was not documented prior to the current investigation.

Description

Site 21RL20 is located on a low alluvial terrace at the base of a bluff and near the left bank of the Red Lake River (Figures 64-66; see Figure 32). An oxbow of the Red Lake River is located immediately east of the site. The terrace is nearly level and appears to be largely undisturbed. Soil is a sandy silt loam near the bluffs and grades to a sandier composition nearer the river channel. ALAC conducted a pedestrian survey of the site area on June 30, 2012. The site was discovered in a cultivated soybean field that afforded 80 percent ground surface visibility at the time of the investigation (see Figures 64 and 66).

Figure 64. Overview of northern portion of site 21RL20, northern orientation.

Location Information Edited

FIGURE 65

Figure 66. Overview of southern portion of site 21RL20, southeastern orientation.

Artifacts comprising site 21RL20 include seven lithic specimens and one animal tooth fragment (Table 14). The small sample of lithics from the site consists of six pieces of reduction detritus and one utilized pebble. The tooth fragment is bovid; however, its heavily weathered and fragmentary state made it impossible to determine whether the specimen is from a cow (*Bos taurus*) or bison (*Bison bison*). The landowner indicated that, to his knowledge, the site area had never been used for livestock grazing and that no fences had ever been erected along the field edge (Lon Seeger, landowner, personal communication 2012). Therefore, it was decided that the specimen should be included in the artifact inventory for the site. None of the material was collected during the present study.

Table 14. Artifacts Documented at Site 21RL20.

Documented Specimen Description	Quantity Identified
Knife River flint tertiary flake – dark brown-colored	1
Chert tertiary flake – light gray-colored	3
Chert primary flake – dark beige-colored	1
Chert shatter – tan and gray-colored	1
Chert utilized pebble – light gray-colored	1
Tooth fragment – bovid	1

Site 21RL21

Site Number: 21RL21	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Bluffs	**Site Area (ac):** 2.0
Elevation Above Mean Sea Level (ft): 1,105	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Brooks (1964)	**Archaeological Subregion:** 7w

Research History

Site 21RL21 was not documented prior to the current investigation.

Description

Site 21RL21 is located atop the valley bluffs overlooking the left bank of the Clearwater River to the south and east (Figures 67-69). The site is located in a cultivated cornfield that afforded approximately 65 percent ground surface visibility at the time of the investigation (see Figure 67). The landscape surrounding the site has been heavily altered and subject to a substantial degree of borrowing for gravel and grading for temporary roadways to gravel pits. Several of these gravel pits are visible to the north and east of the site area.

Figure 67. Overview of site 21RL21, east-southeastern orientation.

A total of 27 prehistoric artifacts were documented at the site, all of which are lithic debitage (Table 15). The majority of these specimens were concentrated within the southern half of the site boundary. No diagnostic artifacts were observed and no cultural material was collected from this site during the present investigation.

Table 15. Artifacts Documented at Site 21RL21.

Documented Specimen Description	Quantity Identified
Chert tertiary flake – gray-colored	2
Chert secondary flake – gray-colored	1
Chert secondary flake – white-colored	2
Chert tertiary flake – tan-colored	1
Chert tertiary flake – white-colored	18
Chert shatter – pink-colored	2
Chert shatter – tan-colored	1

Location Information Edited

FIGURE 69

Location Information Edited

Site 21RL22

Site Number: 21RL22	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: River Valley Bluff Base	**Site Area (ac):** 1.5
Elevation Above Mean Sea Level (ft): 920	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Woodland & possible Contact or Post-contact	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL22 was not documented prior to the current investigation.

Description

Site 21RL22 is located on an alluvial terrace at the base of the bluffs above an oxbow that once was the right bank of the Red Lake River (Figures 70 and 71; see Figure 51). It is only about 100 m northeast of the old river channel and slightly further from Old Crossing Treaty State Wayside Park. ALAC conducted a pedestrian survey of the site area on July 3, 2012. The site is located in a cultivated field that is presently planted to alfalfa. Ground surface visibility averaged approximately 15 percent at the time of the investigation (see Figure 70).

Figure 70. Panoramic overview of site 21RL22, southeastern orientation.

Following the pedestrian survey, ALAC personnel visited with the landowner, Vergil Benoit, about the site. Mr. Benoit, who has researched, among other things, the French-Canadian presence in Red Lake County (see Healey and Kankel 1976:5-7) and the Old Crossing Treaty of 1863, suggested that the general site area was used as a camping ground by both French and American Indians historically (Vergil Benoit, landowner, personal communication 2012).

Six artifacts were documented within the boundaries of site 21RL22 during the current investigation. Specimens documented include four pieces of lithic debitage, one ceramic bodysherd, and one single-hole clothing button produced from shell, or mother-of-pearl (Table 16). The pottery and button were collected for further analysis; however, they are to be returned to the property owner following completion of this study.

Table 16. Artifacts Documented at Site 21RL22.

Documented Specimen Description	Quantity Identified
Quartzite tertiary flake – reddish pink-colored	1
Ceramic bodysherd – thin-walled, grit-tempered, cord-impressed, buff-colored exterior (*collected*)	1
Chert primary flake – white-colored	1
Chert shatter – gray-colored	1
Chert tertiary flake – pinkish orange-colored (heat-treated)	1
Shell button – white-colored, single-hole (*collected*)	1

Location Information Edited

FIGURE 71

The bodysherd (Figure 72) is grit-tempered, although very little temper was observed overall and what is present is extremely small. The specimen exhibits a cord-impressed exterior surface treatment and is relatively thin in profile, measuring 4.8 mm in thickness. The exterior surface is a light buff color, while the interior surface is a dark gray. No decorative motifs were observed on either the interior or exterior of the specimen. The specimen exhibits characteristics most closely associated with Woodland-period ceramic vessels; however, a more detailed level of classification, such as to a particular ware, would be largely conjectural given the present sample set.

The button (Figure 73), produced from shell, or mother-of-pearl, is circular and small, approximately 16 mm in diameter – roughly the size of a dime. It is complete, polished, and undamaged. The specimen is white in color and is not iridescent. A single perforation, approximately 1 mm in diameter, has been drilled through the piece slightly off-center. As a whole, the button is slightly irregular in shape suggesting that it was produced by hand as opposed to being machine-manufactured. It exhibits no additional marks or features. Although the nacre of freshwater mussel shells is generally not iridescent and that of marine shells typically is, there are exceptions to both rules (Kelso 1971:24) and so the lack of iridescence observed on Specimen RC-14-2 is not necessarily an indicator of its origin.

Figure 72. Ceramic bodysherd (Specimen RC-14-1) collected from site 21RL22.

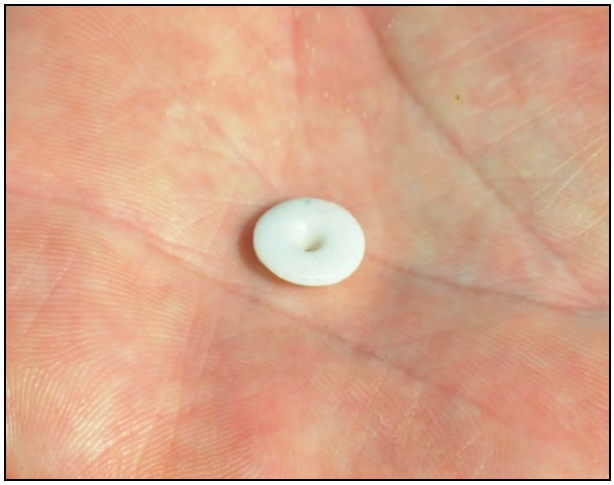


Figure 73. Shell button (Specimen RC-14-2) collected from site 21RL22.

Site 21RL23

Site Number: 21RL23	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.88
Elevation Above Mean Sea Level (ft): 925	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL23 was not documented prior to the current investigation.

Description

Site 21RL23 is located on an alluvial terrace adjacent to the left bank of the Red Lake River (see Figures 32 and 65). It is only about 100 m south of the present river and an old, north-south-oriented abandoned stream channel is located just to the west of the site. ALAC conducted a pedestrian survey of the site area on July 3, 2012. It was discovered in a bare, tilled field that afforded 100 percent ground surface visibility at the time of the investigation (Figure 74).

Artifacts comprising site 21RL23 include one white-colored chert tertiary flake and one dark gray-colored chert primary flake. These specimens were not collected from the site.

Figure 74. Overview of site 21RL23, northeastern orientation.

Site 21RL24

Site Number: 21RL24	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 1.22
Elevation Above Mean Sea Level (ft): 1,125	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Brooks (1964)	**Archaeological Subregion:** 7w

Research History

Site 21RL24 was not documented prior to the current investigation.

Description

Site 21RL24 is located along a terrace scarp near the right bank of the Lost River (Figures 75-78). ALAC conducted a pedestrian survey of the site area on June 20, 2012. It was discovered in a cultivated soybean field that afforded approximately 70 percent ground surface visibility at the time of the investigation (see Figures 75 and 76).

Site 21RL24 is an ephemeral surface scatter of prehistoric lithics consisting of one white-colored chert tertiary flake, two gray-colored chert tertiary flakes, and one mottled gray and pink-colored chert retouched flake. The first three specimens were discovered near the eastern edge of the site, whereas the retouched flake was discovered near the western edge of the site approximately 168 m removed from the others. None of the specimens were collected.

Figure 75. Overview of location of easternmost three artifacts at site 21RL24, northeastern orientation.

Figure 76. Overview of location of westernmost artifact at site 21RL24, southern orientation.

Location Information Edited

FIGURE 77

Location Information Edited

FIGURE 78

Site 21RL25

Site Number: 21RL25	**Site Name:**
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: River Valley Bluff	**Site Area (ac):** 0.1
Elevation Above Mean Sea Level (ft): 1,110	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Plummer (1964)	**Archaeological Subregion:** 7w

Research History

Site 21RL25 was not documented prior to the current investigation.

Description

Site 21RL25 is located on a flat, expansive upland landscape near the right bank of the Clearwater River (see Figures 68 and 69). The site area is presently in brome grass pasture although, at one time, the field was cultivated (Figure 79). ALAC conducted a pedestrian survey of the area on June 15, 2012. A significant degree of rodent disturbance was noted around the immediate site area. At least 20 rodent burrows were observed within a 20-m-diameter area. Because of the significant degree of rodent disturbance, ground surface visibility at the time of the investigation averaged approximately 30 percent in the immediate site area. Along the field edge and also along the length of a two-track in the field, visibility averaged between 30 and 40 percent. Further west and south of the site, however, visibility quickly diminished.

The site consists of a single flake fragment of a mottled gray and reddish-brown-colored chert. It was found atop the rodent burrow backdirt pile noted in the site overview photo (see Figure 79). The flake fragment was not collected.

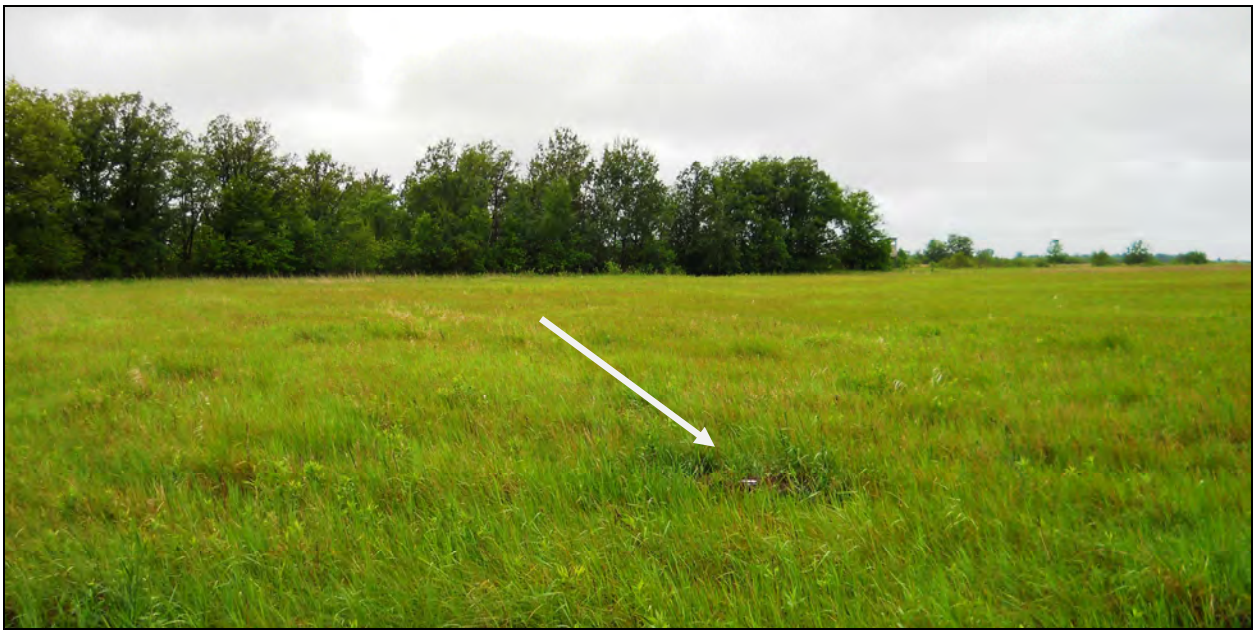


Figure 79. Overview of site 21RL25, southwestern orientation. Arrow points to the location of the rodent burrow in which the flake was found.

Site 21RL26

Site Number: 21RL26	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge	**Site Area (ac):** 1.69
Elevation Above Mean Sea Level (ft): 1,020	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL26 was not documented prior to the current investigation.

Description

Site 21RL26 is located along a north-south oriented relict Campbell beach ridge in a cultivated field planted to winter wheat (Figures 80 and 81; see Figure 32). It is located approximately ½-mile north of, and in the same field and topographic setting as, site 21RL27. It is approximately one mile north-northwest of the Red Lake River. ALAC conducted a pedestrian survey of the site area on October 10, 2012. Ground surface visibility at the time of the investigation was excellent, averaging approximately 100 percent.

Site 21RL26 consists of a sparse scatter of lithic material including two pieces of fire-cracked rock, one yellowish tan-colored chert side-scraper, three light gray-colored chert tertiary reduction flakes, and one granitic hammerstone. It is likely that the site originally extended further east towards the nearby highway. However, a substantial disturbed area, located only about 5 m east of the site and extending towards the highway some 20 m away, appears to have been borrowed from heavily in the past (probably for road construction). The extensive previous disturbance from both the borrowing and highway construction would likely have destroyed any additional site area in this direction.

Figure 80. Overview of site 21RL26, north-northwestern orientation.

Location Information Edited

FIGURE 81

Site 21RL27

Site Number: 21RL27	**Site Name:**
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge	**Site Area (ac):** 0.1
Elevation Above Mean Sea Level (ft): 1,015	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL27 was not documented prior to the current investigation.

Description

Site 21RL27 is located along a north-south oriented relict Campbell beach ridge in a cultivated field planted to winter wheat (Figure 82). It is located approximately ½-mile south of, and in the same field and topographic setting as, site 21RL26 (see Figures 32 and 81). It is approximately $^{2}/_{3}$-mile northwest of the Red Lake River. ALAC conducted a pedestrian survey of the site area on October 10, 2012. Ground surface visibility at the time of the investigation was excellent, averaging approximately 100 percent.

Site 21RL27 consists of one isolated, pink-colored, heat-treated chert tertiary reduction flake. The flake was not collected from the site.

Figure 82. Overview of site 21RL27, southern orientation.

Site 21RL28

Site Number: 21RL28	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited R45W
Landscape Position: River Valley Bluffs	**Site Area (ac):** 2.98
Elevation Above Mean Sea Level (ft): 955	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Woodland	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL28 was first discovered by local resident Ed Moran while searching plowed fields for prehistoric artifacts. Moran's collection of artifacts from this site is currently enough to fill two medium-sized coffee cans. All material was reportedly collected from an area measuring approximately 98 m north-south by 133 m east-west (Ed Moran, area resident, personal communication 2012). Moran's collection from this site consists of hundreds of flakes, as well as six pieces of pottery and two projectile points (see pages 32 and 33, above).

Description

The 21RL28 site area is located on the right bluff of the Red Lake River west of Huot (see Figures 51 and 71). It is primarily situated in a cultivated soybean field; however, the southernmost portion of the site extends into a cornfield (Figures 83 and 84). ALAC surveyed the 21RL28 site area on October 11, 2012. Ed Moran traveled to the site with the field crew and identified the extent of his collection area prior to the archeological survey. The harvested fields afforded approximately 50 percent ground surface visibility at the time of the study.

Pedestrian survey conducted within the fields resulted in the identification of one piece of fire-cracked rock and two light gray-colored tertiary reduction flakes of chert. These specimens were not collected from the site.

Figure 83. Overview of northern portion of site 21RL28, northwestern orientation.

Figure 84. Overview of southernmost portion of site 21RL28, southwestern orientation.

Prior to the pedestrian survey, ALAC personnel photodocumented the artifacts collected from the site by Mr. Moran. The majority of Moran's collection consists of tertiary reduction flakes, primarily of a light gray-colored chert. However, detritus representing all stages of lithic tool reduction is present and the complete collection of flakes reflects a variety of different raw material types (Figure 85).

The projectile points are complete corner- and side-notched specimens (Figure 86). Although they are generally reminiscent of other non-terminal Woodland-period specimens, they are not clearly characteristic of a specific historic context (see Arzigian 2008:23, 56, 88, 113).

Figure 85. Sample of lithic debitage from site 21RL28. Ed Moran collection.

Figure 86. Lithic corner-notched (left) and side-notched (right) projectile points from site 21RL28. Ed Moran collection.

Of particular note in the collection is the pottery. The collection of ceramics from the site consists of five bodysherds and one small rimsherd (Figure 87). The bodysherds are all buff-colored and are approximately 5-7 mm thick with grit temper and cord-impressed exterior surface treatment. No decorative motifs were observed on the specimens. Similar to the bodysherds, the rimsherd (see Figure 87, lower left) is buff-colored and grit-tempered. It, too, exhibits faint evidence of cord-impressed exterior markings, although the cord impressions, which are oriented horizontally, appear to have been subsequently smoothed-over. The rim is straight in profile and slightly thinner than the bodysherds. The lip is unthickened and appears largely flat. The specimen is thickest at the point furthest from the lip (approximately 5 mm). Decoration on the rim is limited to a single series of nine narrow, horizontal impressions arranged vertically from the lip downward. Spacing between the impressions is even narrower than the impressions themselves, and the impressions exhibit a faint *v*-shaped pattern suggestive of the use of some form of comb-like tool.

Figure 87. Ceramic rimsherd (lower left) and bodysherds from site 21RL28. Ed Moran collection.

Site 21RL29

Site Number: 21RL29	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: General Uplands (just west of glacial beach deposits)	**Site Area (ac):** 1.38
Elevation Above Mean Sea Level (ft): 965	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric (possibly late Woodland)	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RL29 was first discovered by local resident Ed Moran while searching plowed fields for prehistoric artifacts. Moran previously collected a small number of prehistoric specimens from the site area, which are currently in his possession. All of the material was reportedly collected from a relatively small area measuring approximately 80 m in diameter (Ed Moran, area resident, personal communication 2012). Moran's collection from this site consists of one projectile point fragment, one biface fragment, one end scraper, one fragment of bison long bone, one piece of shatter, and three ceramic bodysherds.

Description

The site area, which was previously cultivated, is presently planted to CRP; it is approximately 260 m northeast of, and in the same field as, site 21RLr (Figures 88 and 89; see Figure 29). Generally speaking, the site area is in a flat upland landscape surrounded by numerous small, low-lying swales or sloughs. ALAC surveyed the 21RL29 site area on October 9, 2012. Ed Moran traveled to the site with the field crew and identified the extent of his collection area prior to the archeological survey. The dense vegetation covering the majority of the site area afforded virtually zero ground surface visibility; however, a narrow firebreak, which bisected the site in a north-south direction, provided the field crew with a small area of good visibility (approximately 60 percent). Pedestrian survey conducted within the designated site area resulted in the identification of no additional cultural material.

Figure 88. Overview of site 21RL29, north-northeastern orientation. The firebreak is clearly visible extending from the lower right-hand corner of the frame.

Location Information Edited

FIGURE 89

Following the pedestrian survey of site 21RL29, ALAC personnel photodocumented the artifacts collected from the site by Moran (Figures 90-93).

Of particular note in the collection are the projectile point and the three ceramic bodysherds. The projectile point specimen (see Figure 93), produced on a mottled light yellowish tan-colored chert, is side-notched and has no distal tip. The specimen exhibits evidence of having been resharpened for use as a cutting tool.

The bodysherds are all relatively thin-walled (3-4 mm thick) specimens with grit temper and a plain, possibly smoothed-over cord-impressed exterior surface treatment (see Figures 90 and 92). No decorative motifs were observed on the specimens. Two of the sherds are dark gray-colored, while the third has a light buff-colored appearance. Although typological classification of these three, small bodysherds is, at best, tenuous, the notable characteristics do fit within the parameters of those generally ascribed to any variety of Late Woodland-period types (see Anfinson 1979:18).

Figure 90. Ceramic bodysherd (top) and bison long bone fragment (bottom) from site 21RL29. Ed Moran collection.

Figure 91. Lithic biface fragment from site 21RL29. Ed Moran collection.

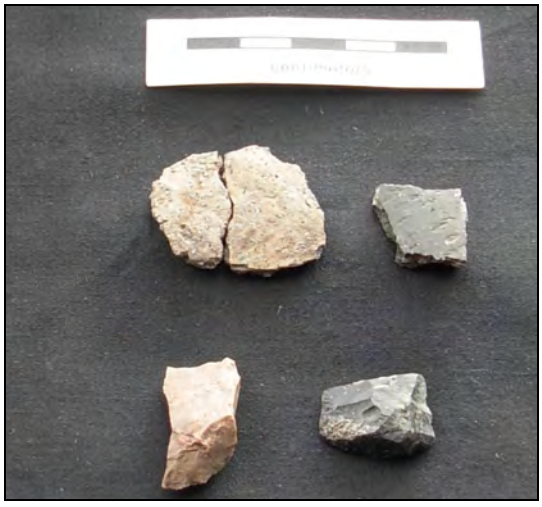


Figure 92. Ceramic bodysherds (top row), lithic shatter (bottom left), and end scraper (bottom right) from site 21RL29. Ed Moran collection.

Figure 93. Reworked side-notched projectile point from site 21RL29. Ed Moran collection.

Site 21RL30

Site Number: 21RL30	**Site Name:**
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: River Valley Terrace	**Site Area (ac):** 0.01
Elevation Above Mean Sea Level (ft): 996	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Plummer NW (1964)	**Archaeological Subregion:** 6n

Research History

Site 21RL30 was first documented during the present study. It is, however, located within the larger and less precisely defined boundaries of reported site 21RLa. A brief background of site 21RLa is provided on page 102, below.

Description

Site 21RL30 is located on a high terrace of the Red Lake River just east of the town of Red Lake Falls (Figures 94-96). It is located in a previously cultivated field that is presently planted to alfalfa. Ground surface visibility averaged 20 percent at the time of the investigation. The site was discovered on September 8, 2012 within the larger boundaries of previously reported site 21RLa (see below).

Site 21RL30 consists of a single tertiary reduction flake of Red River chert. The specimen was retrieved from a deep soil core obtained from the high terrace with a Giddings soil core rig. The flake was discovered while screening soil matrix collected from the core. It was recovered from a segment of the core that derived from a depth of between 20 and 50 cmbs. The flake will be returned to the landowner upon completion of the study.

Figure 94. Overview of the high terrace landform in the general vicinity of site 21RL30, western orientation.

Location Information Edited

FIGURE 95

Location Information Edited

FIGURE 96

Site 21RLa (Dahle)

Site Number: 21RLa	**Site Name:** Dahle
Site Type/Function: Burial Mounds/Artifact Scatter	**Legal Location:** Edited
Landscape Position: Valley Terrace & Upland Bluffs	**Site Area (ac):** boundary is 84.25 ac but the site was originally said to be only about 4 or 5 ac.
Elevation Above Mean Sea Level (ft): 970-1,030	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric & Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Plummer NW (1964)	**Archaeological Subregion:** 6n

Research History

Site 21RLa was discovered in 1972 when the property owners at the time, Mr. O. P. and Mrs. P. Dahle, first plowed the land for cultivation. A multitude of prehistoric artifacts, as well as some historic-period materials, were discovered in the fields following cultivation. Among the materials collected were numerous pieces of lithic debitage, bison teeth and bone fragments, grooved mauls and axes, bifaces, scrapers, a variety of different projectile points, fire-cracked rock, broken glass, whiteware, and other historic-period objects believed to be trade goods (Dahle 1979). The 21RLa site file also includes a page of notes concerning the site that indicate the presence of a probable hearth feature described as an "...area of charcoal 3-4" thick..." (OSA Site File – 21RLa). In addition, the notes discuss the presence of what appears to be a group of nine burial mounds at the site. These features, described as "circular humps" measuring 25-30 ft across and containing carbon, were reportedly located in a field opposite Sullivan's Supper Club in Section 23 between the river and [Highway] 32. The area containing the "humps" and associated materials is reported to measure between 300 and 400 ft. Mauls and human bones were reportedly found in an adjacent area "several years ago" (OSA Site File – 21RLa).

A series of letters included in the 21RLa site file indicates that the MHS was first notified of the site in 1975. Mrs. Priscilla Dahle communicated with personnel from the MHS about having an archeologist visit the site and document the collections associated with it. Notes in the site file mention that someone did, evidently, photodocument the artifacts; however, it is not clear who this was or where the photographs and artifact inventory presently are located. In 1979, Mrs. Dahle sent the MHS a letter and attached some of her own photographs that depicted a portion of the site 21RLa collection (Figures 97-101). In 1980, she was told that an archeologist would return to visit the site and document additional specimens that had been added to the collection since 1975, but apparently this never happened.

Figure 97. Lithic artifacts from site 21RLa including flakes (top two rows) and "scrapers, tools, and crude missiles" (bottom). Artifacts photographed and described by P. Dahle, 1979.

Figure 98. Lithic artifacts from site 21RLa including "axes, hammers, and hoes." Artifacts photographed and described by P. Dahle, 1979.

Figure 99. Lithic artifacts from site 21RLa including "stone hammers." Artifacts photographed and described by P. Dahle, 1979.

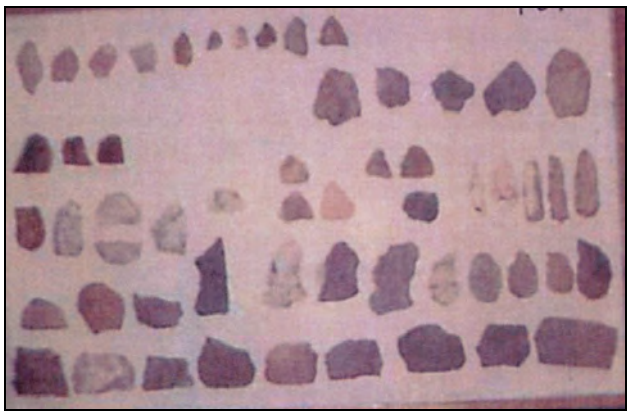


Figure 100. Artifacts from site 21RLa including "broken pieces of spears and scrapers?, antler bone tips, and small scrapers." Artifacts photographed and described by P. Dahle, 1979.

Figure 101. Artifacts from site 21RLa including "arrowheads from 3 cultures, knives, scrapers, tools, buffalo teeth, and [illegible word] stones with [illegible word] holes." Artifacts photographed and described by P. Dahle, 1979 (image to left).

In 1982, the Dahles anonymously placed several of the artifacts in their collection on public display at the Thief River Falls Northwest Regional Library. While the specimens were on display, an article was published about the site in the *Thief River Falls Times*. The newspaper article indicated that the collection included "…projectile points (arrowheads), stone hammers, hide scrapers, flake tools, thousands of flint chips of assorted color, hundreds of tiny petrified bone pieces, and teeth from buffalo, bear, wolves, and deer." It went on to note that "Many of the flint chips identify the stones they were chipped from as being brought there from several places hundreds of miles away" (*Thief River Falls Times* 1982:1). The article describes the site as being a multi-component habitation that included projectile point specimens diagnostic of the Archaic, Woodland, Mississippian, and Paleoindian cultural groups (*Thief River Falls Times* 1982:4). However, it fails to note who assigned these designations, and, curiously, there is no mention of any aboriginal ceramics having been collected from the site, either in the article or in the notes included within the site file.

Description

ALAC investigated the 21RLa site area on June 20, 2012 (see Figures 95 and 96). The area contained within the 21RLa boundaries predominantly consists of previously cultivated fields that are presently planted to alfalfa (Figure 102). Ground surface visibility in the area was generally poor at the time of the investigation, averaging approximately

10 percent on the lower floodplain and T-1 terrace and approximately 20 percent on the higher terrace and bluffs. No artifacts were observed, nor were any features identified during the pedestrian survey. On September 8, 2012, Project Geomorphologist Rolfe Mandel returned to the site area to collect a series of deep soil cores for analysis. One core taken from the upper terrace yielded a tertiary flake from a subsurface context. The flake was designated site 21RL30 and is discussed in greater detail above.

Figure 102. Overview of a portion of site 21RLa depicting the upper terrace sequence, south-southwestern orientation.

The current landowner indicated that a selection of the artifacts originally collected from this site by the previous owners had, at one time, been on display at either the Red Lake County Courthouse or the Red Lake Falls Public Library. Unfortunately, the artifacts are currently not at either of these institutions and attempts to identify the whereabouts of the previous owners proved unsuccessful.

In addition to the pedestrian survey, a 1-m-resolution bare earth DEM of the area, generated from LiDAR data, was examined. Nothing on the DEM within the reported site boundary was suggestive of a grouping of mound features (Figure 103). Of course, this does not preclude such features from actually being present in the area. It is possible that previous cultivation has obliterated the mound superstructures and/or that the resolution of the LiDAR data is insufficient to allow for the detection of the features.

Location Information Edited

FIGURE 103

Site 21RLb (North West Company Trading Post)

Site Number: 21RLb	**Site Name:** North West Company Trading Post
Site Type/Function: Fur Trade Post	**Legal Location:** Edited
Landscape Position: River Valley	**Site Area (ac):** 81?
Elevation Above Mean Sea Level (ft): 980-1,030	**(Re)visited by ALAC?:** No
Cultural Affiliation: Euroamerican	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLb is the reported location of a late eighteenth century fur trading post established by the North West Company. The post was established in the 1790s at the location of the present town of Red Lake Falls. In 1798, it was run by Jean Baptiste Cadotte (Nute 1930:368). Historical and anecdotal accounts place the post on the north (right) bank of the Red Lake River at its confluence with the Clearwater River (see Figures 32 and 33). The area was briefly investigated on July 7, 1972 by archeologist Elroy Quenroe (Figure 104) as part of a U.S. Army Corps of Engineers project that proposed to construct a dam along the Red Lake River in Polk County (Streiff and Roney 1973). However, no evidence of the post was identified at that time.

Description

The reported location of site 21RLb was not examined by ALAC. The focus of the current project is solely directed towards the identification and documentation of prehistoric site localities. The investigation of historic-period sites is beyond the scope of this study.

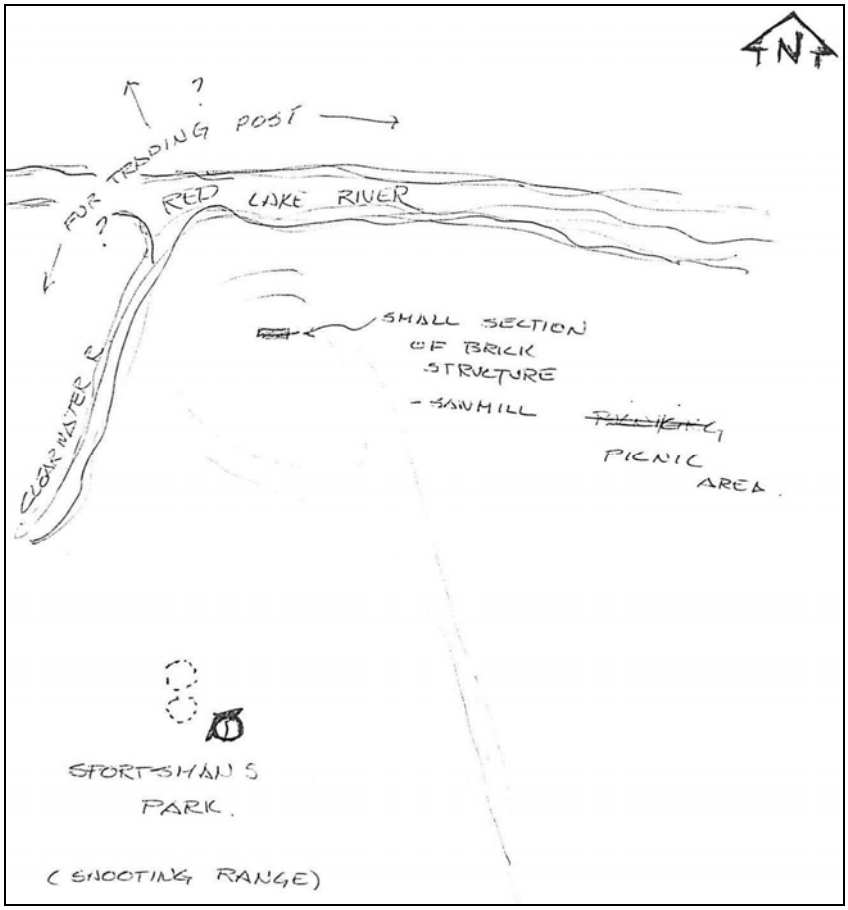


Figure 104. Sketch map of the reported location of sites 21RLb and 21RLp in Sportsman's Park, Red Lake Falls (from 21RLb site file).

Site 21RLc

Site Number: 21RLc	**Site Name:**
Site Type/Function: Earthwork?/Burial Mound?	**Legal Location:** Edited
Landscape Position: River Valley	**Site Area (ac):** 40
Elevation Above Mean Sea Level (ft): 1,100	**(Re)visited by ALAC?:** Yes (in part)
Cultural Affiliation: Probable Prehistoric (Woodland?)	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Brooks (1964)	**Archaeological Subregion:** 7w

Research History

Little is known about reported site 21RLc. The OSA site file indicates that a large mound at the confluence of the Poplar and Lost rivers was reported by the Roseau (read: *Red Lake*) County Highway Engineer. The mound is reported to be in the southeastern-most 40-ac parcel of Section 6; however, no additional description of the feature or its immediate environs is provided (Figures 105-107). The SHPO database files provide no indication as to when the site was reported.

Description

On June 18, 2012, an ALAC field crew conducted a pedestrian survey of approximately 125 ac of land in and around the reported site 21RLc area. All uplands and bluff edges within the reported 40-ac site boundary were investigated; however, no mound was identified, nor were any prehistoric or historic artifacts or features observed. At the time of the investigation, the surveyed parcel was planted to winter wheat that completely obscured the ground surface.

In addition to the pedestrian survey, a 1-m-resolution bare earth DEM of the area, generated from LiDAR data, was examined. Nothing on the DEM, either within or around the 40-ac site boundary, was suggestive of a large mound feature. The topographic quadrangle does depict what appear to be two elevated hilltops in the river valley bottom between Sections 5 and 6, and it is possible that the Highway Engineer was referring to this feature as the mound. This elevated area within the valley bottom is also depicted on the LiDAR DEM (Figure 108), although it is apparent that this landform is the result of natural processes and not a human construct. If the reported mound was located atop the valley bluffs, then it must have been plowed down or destroyed some time prior to the current study.

Figure 105. Overview of reported location of site 21RLc, northern orientation.

Location Information Edited

FIGURE 106

Location Information Edited

FIGURE 107

Location Information Edited

FIGURE 108

Site 21RLd (Delorme)

Site Number: 21RLd	**Site Name:** Delorme
Site Type/Function: Ghost Town/Railroad Switching Station	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge/ General Uplands	**Site Area (ac):** Unknown (somewhere along the railroad line within the 640-ac designated parcel)
Elevation Above Mean Sea Level (ft): approximately 1,100	**(Re)visited by ALAC?:** Yes (in part)
Cultural Affiliation: Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Marcoux Corners (1982)	**Archaeological Subregion:** 6n

Research History

In 1886, the Duluth and Manitoba Railroad Company constructed a line north from Clay County to Red Lake Falls. Along this line, just into Red Lake County, the railroad built a small switching and loading station called Delorme (Figures 109-113). The station was primarily utilized for the loading of hay, grain, and timber (Healy and Kankel 1976:70).

The 21RLd site file indicates only that the town was located somewhere within a one-mile-square parcel of land comprising the E½ of Section 33 and the W½ of Section 34. No additional information is provided in the site file; however, the railroad line is clearly depicted on the 7.5-minute topographic quadrangle, and any remnants of the station would surely be located somewhere along this line. An examination of historical county plat books (Ogle 1911; Pennington County Historical Society 1909) revealed that a J. & E. Delorme owned the 160-ac parcel of land in the NW¼ of Section 34. This would seem to suggest that the switching station was actually located along the tracks in this quarter section.

Description

ALAC conducted a pedestrian survey of 134 ac within the SE¼ of the reported 21RLd site area on June 19, 2012 (see Figures 109 and 112-113). At the time of the investigation, the survey area was neither cultivated nor used as an active pasture for livestock grazing. A large portion of the area was either previously quarried for gravel or is presently being quarried for gravel. Ground surface visibility within the eastern portion of the surveyed parcel averaged approximately 40 percent. In the western portion, visibility was less, averaging approximately 10 percent. Numerous small animal burrows were observed throughout the western half of the area, and the backdirt mounds were inspected as a means of augmenting the surface survey in this area.

Figure 109. Overview of survey parcel within reported 21RLd site area from southwestern corner, northern orientation.

Location Information Edited

FIGURE 110

Location Information Edited

FIGURE 111

Figure 112. Overview of clearing in eastern portion of survey parcel within reported 21RLd site area, eastern orientation.

Figure 113. Overview of trail in southern portion of survey parcel within reported 21RLd site area, southeastern orientation.

No evidence of the town site or any other cultural material was observed during the investigation. If the Delorme switching station was actually built in the quarter section (NW¼ of Section 34) owned by J. & E. Delorme, this would explain why no evidence of it was observed during the present survey. The choice to survey the particular parcel in the SW¼ of the section was based on its proximity to a glacial beach ridge complex and other general uplands, not on its proximity to site 21RLd. Because site 21RLd is not prehistoric, further investigation is beyond the scope of the present study.

Site 21RLe (Hilltop)

Site Number: 21RLe	**Site Name:** Hilltop
Site Type/Function: Ghost Town	**Legal Location:** Edited
Landscape Position: General Uplands?/ Valley Bluff?	**Site Area (ac):** Alpha site area designates an entire 640-ac parcel of land; actual size of town site unknown
Elevation Above Mean Sea Level (ft): approximately 1,000	**(Re)visited by ALAC?:** Yes (in part)
Cultural Affiliation: Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

The 21RLe site file indicates only that a town called Hilltop was located somewhere within a one-mile-square parcel of land in Section 18 of Red Lake Falls Township (Figure 114; see Figures 32 and 65). No additional information is provided in the site file. Historical atlases and county plat books available for examination (Andreas 1874; Ogle 1911; Pennington County Historical Society 1909) do not depict the town; however, the plat books (Ogle 1911; Pennington County Historical Society 1909), as well as the 7.5-minute topographic quadrangle map (see Figure 32), do depict an old railroad grade running along the north side of the river in this section, and it is quite likely that the town site would have been located somewhere along this railroad route.

Description

On June 27, 2012, ALAC surveyed the entire portion of Section 18 south of the Red Lake River and an additional 191 acres north of the river in the NW¼ of Section 18. Although the intention of investigating the areas was centered on identifying prehistoric site areas, survey crews were aware of the possible presence of the ghost town as well (see Figure 65); no evidence of a town site was observed. As was previously mentioned, it appears likely that, despite the field investigation demonstrating otherwise, any remnants of the townsite would be located along the old railroad grade north of the river in this section (see Figure 114). It is possible that the town site was originally located along the railroad grade in the portion of the section that was not surveyed, and it is also possible that it was located where the farmstead just north of the railroad grade in the NW¼ of the section now is. Because site 21RLe is not prehistoric, further investigation is beyond the scope of the present study.

Location Information Edited

FIGURE 114

Site 21RLf

Site Number: 21RLf	**Site Name:** Unknown
Site Type/Function: Ghost Town	**Legal Location:** Edited
Landscape Position: General Uplands	**Site Area (ac):** Alpha site area designates an entire 640-ac parcel of land; actual size of town site unknown
Elevation Above Mean Sea Level (ft): approximately 1,085	**(Re)visited by ALAC?:** No
Cultural Affiliation: Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Terrebonne (1964)	**Archaeological Subregion:** 6n

Research History

The 21RLf site file indicates only that an unnamed ghost town was located somewhere within a one-mile-square parcel of land in Section 9 of Terrebonne Township (Figures 115 and 116). No additional information is provided in the site file. Historical atlases and county plat books available for examination (Andreas 1874; Ogle 1911; Pennington County Historical Society 1909) do not depict a town in that locality; however, it is interesting that one of the plat books (Ogle 1911) depicts a structure in the NE¼ of Section 9 that is labeled *cheese factory*. It is uncertain whether this cheese factory has any connection with the reported ghost town.

Description

No portion of this area was surveyed by ALAC during the current study. Because site 21RLf is not prehistoric, further investigation is beyond the scope of the present study.

Location Information Edited

FIGURE 115

Location Information Edited

FIGURE 116

Site 21RLg

Site Number: 21RLg	**Site Name:**
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: General Uplands	**Site Area (ac):** 640
Elevation Above Mean Sea Level (ft): 1,065	**(Re)visited by ALAC?:** No
Cultural Affiliation: Probable Archaic	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Marcoux Corners (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLg consists of a single hammered copper projectile point discovered on the surface of a plowed field in Lake Pleasant Township. The specimen is described as having been discovered near a segment of the old Pembina Trail in 1910 by Mr. J. F. Norman, an avid early 1900s collector of copper artifacts from Minnesota and Wisconsin (Jenson 1962:65). In 1953, the specimen was donated, along with several other copper artifacts collected by Norman, to the Science Museum of Minnesota, where it was curated under Accession No. 2101/11.

The specimen is listed as 16.43 cm in length and is of the stemmed and socketed variety that Johnson (1964:11) designated as *Type 1A* in his article on copper artifacts and their association with Glacial Lake Agassiz beach ridges (Figure 117). Johnson (1964:13) also notes that the location of the find is between the Campbell and Herman beach ridges.

The location of the find was reported no more specifically than to the section level within Lake Pleasant Township, and this area was apparently never subsequently field-verified.

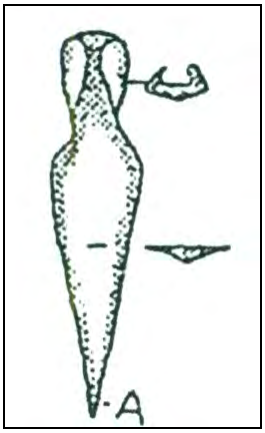


Figure 117. Sketch of the "stemmed and socketed" style of copper projectile point collected from site 21RLg (from Johnson 1964:11).

Description

No portion of the reported site 21RLg area was surveyed by ALAC during the current study (Figure 118; see Figure 110). However, scale photographs of the curated projectile point specimen from this site were provided by Ed Fleming, Curator of Archaeology, Science Museum of Minnesota (Figure 119).

Location Information Edited

FIGURE 118

Figure 119. Copper projectile point, Accession No. 2101/11, site 21RLg, obverse (top) and reverse (bottom) (image courtesy of the Science Museum of Minnesota).

Site 21RLh

Site Number: 21RLh	**Site Name:**
Site Type/Function: Single Artifact	**Legal Location:** Edited
Landscape Position: River Valley	**Site Area (ac):** 640
Elevation Above Mean Sea Level (ft): 910-970	**(Re)visited by ALAC?:** No
Cultural Affiliation: Probable Archaic	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLh consists of a single hammered copper projectile point discovered from a surface context in Louisville Township. The specimen is part of the J. F. Norman copper artifact collection and is presently curated at the Science Museum of Minnesota. The specimen is of the rat tail variety that Johnson (1964:11) designated as *Type 1C* in his article on copper artifacts and their association with Glacial Lake Agassiz beach ridges (Figure 120). Johnson (1964:13) also notes that the location of the find is immediately west of the Campbell beach ridge.

The location of the find was reported no more specifically than to the section level within Louisville Township, and this area was apparently never subsequently field-verified.

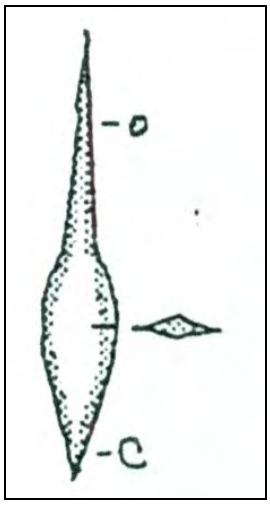


Figure 120. Sketch of the "rat tail" style of copper projectile point collected from site 21RLh (from Johnson 1964:11).

Description

No portion of this area was surveyed by ALAC during the current study (Figures 121 and 122).

Location Information Edited

FIGURE 121

Location Information Edited

FIGURE 122

Site 21RLi (R. Larson)

Site Number: 21RLi	**Site Name:** R. Larson
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: River Valley, Valley Bluffs, & General Uplands	**Site Area (ac):** 137.0
Elevation Above Mean Sea Level (ft): 895-960	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric (possible late Paleoindian)	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLi was reported by Streiff and Roney (1973:3) to be the location from which a small collection of prehistoric artifacts, including multiple grooved mauls, was previously obtained by the property owner (see Figures 51 and 52). The report indicates that a surface survey of the property was conducted but that no additional artifacts were documented (Streiff and Roney 1973:3). The mauls from the collection were examined and photodocumented by the crew at the time of their investigation (Streiff and Roney 1973:Figure 8); however, no mention of additional artifact types is provided. No additional information was available in the site file.

Subsequent discussions between ALAC personnel and area resident Ed Moran resulted in the identification of two lanceolate projectile points in his artifact collection that were reportedly obtained from this site area (Ed Moran, area resident, personal communication 2012). The specimens were photodocumented on July 12, 2012 (see page 32, above).

Description

ALAC investigated the entirety of the reported 21RLi site area on June 19, 2012. The area contained within 21RLi is predominantly cultivated, although fields of brome grass pasture are also present. Two farmyards are located below the bluffs near the river. Ground surface visibility in the cultivated fields varied between 50 and 60 percent, whereas visibility in the pasture varied between 20 and 30 percent. Most of the land that is presently pasture was previously cultivated (Drew Larson, landowner, personal communication 2012).

ALAC identified no cultural properties below the bluffs in the site 21RLi area; however, two prehistoric sites, 21RL11 and 21RL12, were identified atop the bluffs overlooking the river valley. A third prehistoric site, 21RL13, was identified approximately 85 m north of the boundaries designated for 21RLi. These sites are described in greater detail on pages 61-65, above.

Site 21RLj (J. Hanson)

Site Number: 21RLj	**Site Name:** J. Hanson
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: River Valley Terrace and Bluffs	**Site Area (ac):** 121.25
Elevation Above Mean Sea Level (ft): 915-950	**(Re)visited by ALAC?:** No
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Gentilly (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLj was reported by Streiff and Roney (1973:4) to be the location from which a small collection of grooved mauls was previously obtained by the property owner (Figure 123; see Figure 121). The report indicates that a surface survey of the property was conducted but that no additional artifacts were documented (Streiff and Roney 1973:4). The collection of mauls was examined and photodocumented by the crew at the time of their investigation (Streiff and Roney 1973:Figure 12). No additional information was available in the site file.

Description

No portion of this area was surveyed by ALAC during the current study.

Location Information Edited

FIGURE 123

Site 21RLk (Brunelle)

Site Number: 21RLk	**Site Name:** Brunelle
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: Upland – Valley Bluff & River Valley Terrace	**Site Area (ac):** 153.0
Elevation Above Mean Sea Level (ft): approximately 950-970	**(Re)visited by ALAC?:** No
Cultural Affiliation: Probable Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLk was reported by Streiff and Roney (1973:6) to be the location from which a small local artifact collection was obtained (see Figures 22 and 23). The report indicates that the field crew examined the artifact collection that reportedly came from this area but that the locality was never actually surveyed. It notes that the collection "…was sparse and no additional work is recommended" (Streiff and Roney 1973:6). No mention of a cultural affiliation is made, even in the most general terms; however, the SHPO database identifies the site as Probable Prehistoric. No additional information was available in the site file or database.

Description

No portion of this area was surveyed by ALAC during the current study.

Site 21RLl (Altpeter)

Site Number: 21RLl	**Site Name:** Altpeter
Site Type/Function: Unknown	**Legal Location:** Edited
Landscape Position: Upland – Valley Bluff	**Site Area (ac):** 80
Elevation Above Mean Sea Level (ft): approximately 975	**(Re)visited by ALAC?:** No
Cultural Affiliation: Unknown	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLl was reported by Streiff and Roney (1973:6) to be the location from which a small local artifact collection was obtained (see Figures 121 and 122). The report indicates that a crew conducted a pedestrian surface survey of the property but failed to identify any additional cultural material. It also indicates that the informant could not locate his artifact collection from the site to show the crew (Streiff and Roney 1973:6). No mention of a general cultural affiliation is made. No additional information was available in the site file.

Description

No portion of this area was surveyed by ALAC during the current study.

Site 21RLm

Site Number: 21RLm	**Site Name:**
Site Type/Function: Artifact Scatter	**Legal Location:** Edited
Landscape Position: Upland – Valley Bluff	**Site Area (ac):** 108
Elevation Above Mean Sea Level (ft): approximately 985	**(Re)visited by ALAC?:** No
Cultural Affiliation: Unknown	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLm was reported by Streiff and Roney (1973:6) to be the location from which a small local artifact collection was obtained (Figure 124; see Figure 56). The collection is described as being "…small and from a scattered area…at the very end of the project basin…" (Streiff and Roney 1973:6). No mention of a general cultural affiliation is made and the property owner at the time was listed as unknown. No additional information was available in the site file.

Description

No portion of this area was surveyed by ALAC during the current study.

Location Information Edited

FIGURE 124

Site 21RLn (West Cemetery/Cyr Cemetery)

Site Number: 21RLn	**Site Name:** West Cemetery/Cyr Cemetery
Site Type/Function: Cemetery	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge	**Site Area (ac):** 4.76
Elevation Above Mean Sea Level (ft): 1,005	**(Re)visited by ALAC?:** No
Cultural Affiliation: Native American/Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Marcoux Corners (1982)	**Archaeological Subregion:** 6n

Research History

This site is an abandoned, early pioneer cemetery that originally held over 200 graves, including that of early explorer/fur trader and Red Lake Falls founder Pierre Bottineau (see Figures 22 and 23). The site was surveyed by Elroy Quenroe on July 5, 1972 as part of a U.S. Army Corps of Engineers project that proposed to construct a dam along the Red Lake River in Polk County (Streiff and Roney 1973).

On November 15 of that year, the cemetery was officially added to the State Register of Historic Places. In the 21RLn site file, it is noted that, as of the 1972 survey, only approximately 20 grave markers were observed at the cemetery and that many of the burials were previously exhumed and transferred to town cemeteries. The cemetery is described as being not maintained. Quenroe sketched the location of the cemetery in relation to the nearby farmyard and 21RL1/21RLo mound group and included it in the site form (Figure 125).

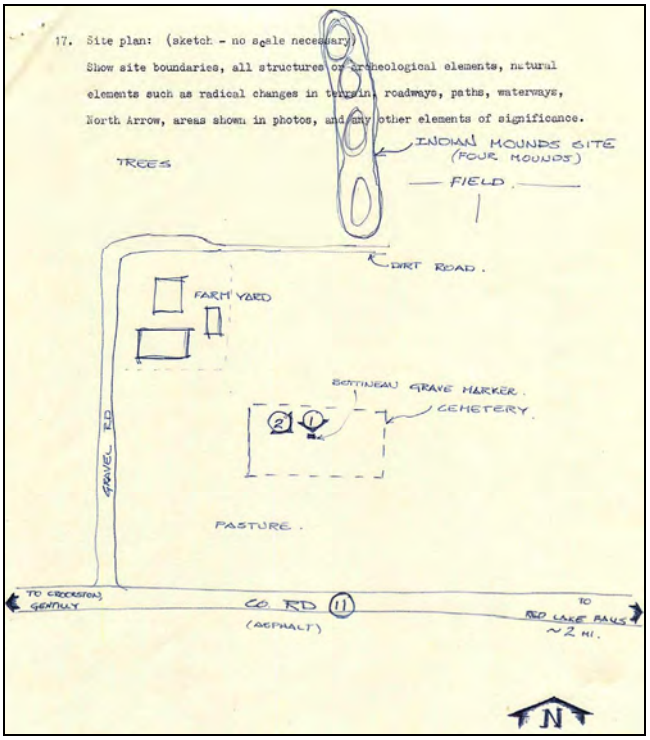


Figure 125. Sketch map of site 21RLn location in relation to nearby farmyard and site 21RL1/21RLo mound group (from 21RLn site file).

Description

No portion of this area was surveyed by ALAC during the current study. ALAC conducted a pedestrian survey of the lands around this site on June 15, 2012 while investigating nearby site 21RL1/21RLo. A very brief visual examination of the cemetery, conducted in passing, suggests that little has changed since the 1972 site visit. The site is not prehistoric and further investigation is beyond the scope of the present study.

Site 21RLo

Site Number: 21RLo (21RL1)	**Site Name:** Red Lake River Mounds
Site Type/Function: Burial Mound/Lithic Scatter	**Legal Location:** Edited
Landscape Position: Glacial Beach Ridge	**Site Area (ac):** 27.04
Elevation Above Mean Sea Level (ft): 1,010	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Woodland (possible Laurel & Transitional; confirmed Late Woodland)	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Marcoux Corners (1982) & Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

The SHPO database files indicate that site 21RLo was first reported in 1972 as a group of four mounds. Sites 21RLo and 21RL1 are actually the same site. See the site 21RL1 description, above.

Description

See site 21RL1 description, pages 35-39, above.

Site 21RLp (Sawmill Ruins)

Site Number: 21RLp	**Site Name:** Sawmill Ruins
Site Type/Function: Ruins/Lumber Mill	**Legal Location:** Edited
Landscape Position: River Terrace	**Site Area (ac):** 0.24
Elevation Above Mean Sea Level (ft): 965	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Euroamerican	**Site Condition:** Disturbed
USGS 7.5' Quadrangle(s): Red Lake Falls (1982)	**Archaeological Subregion:** 6n

Research History

This locality was reported to be the possible site of a late nineteenth century sawmill (see Figures 32 and 33). The site was surveyed by Elroy Quenroe on July 5, 1972 as part of a U.S. Army Corps of Engineers project that proposed to construct a dam along the Red Lake River in Polk County (Streiff and Roney 1973). In the 21RLp site file, Quenroe indicates that he observed a small pile of bricks on the south side of the confluence of the Clearwater and Red Lake rivers in what is now Sportsman's Park. The site file indicated that the bricks could not positively be connected to the 1898 sawmill; however, historical records do place the mill in this locality. A sketch of the location of the brick pile was included in the site form (see Figure 104). The site file indicates that local resident Al Buse has in his possession mill stones from the site. This was confirmed during ALAC's visit with Mr. Buse on July 10, 2012. Also in Mr. Buse's possession is the original cast iron turbine that drove the mill.

Description

ALAC briefly revisited this site on June 18, 2012 while conducting additional survey work in the vicinity of Sportsman's Park. A cursory examination of the reported site area was conducted; however, no evidence of the bricks identified in 1972 by Quenroe was observed. Because the site is not prehistoric, further investigation is beyond the scope of the present study.

Site 21RLq

Site Number: 21RLq	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** SEdited
Landscape Position: General Uplands	**Site Area (ac):** 1.64
Elevation Above Mean Sea Level (ft): 965	**(Re)visited by ALAC?:** No (reported site identified from across a fence)
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLq is a reported scatter of lithic flakes measuring approximately 90 m in diameter (see Figures 29 and 89). It was identified by local collector Ed Moran, who reported observing the scatter of detritus while previously searching the area for additional artifacts. None of the material from this site was previously collected by Moran and he observed nothing other than lithic debitage (Ed Moran, local resident, personal communication 2012).

Description

The site is presently located in a cultivated wheat field approximately 375 m west of site 21RL29. The ground surface visibility appeared to be about 10 percent at the time of the current investigation. ALAC was taken to the general site area by Moran on October 5, 2012; however, ALAC did not have permission to survey the property on which the site is located. Instead, the site was photodocumented from an adjacent property (Figure 126). The general extent of the site was identified by Ed Moran.

Figure 126. Overview of general area of site 21RLq, western orientation.

Site 21RLr

Site Number: 21RLr	**Site Name:**
Site Type/Function: Lithic Scatter	**Legal Location:** SEdited
Landscape Position: General Uplands	**Site Area (ac):** 1.44
Elevation Above Mean Sea Level (ft): 965	**(Re)visited by ALAC?:** Yes
Cultural Affiliation: Prehistoric	**Site Condition:** Unknown
USGS 7.5' Quadrangle(s): Dorothy (1982)	**Archaeological Subregion:** 6n

Research History

Site 21RLr is the reported location of a lithic projectile point and a biface; the area measures approximately 86 m in diameter (see Figures 29 and 89). It was initially reported to ALAC by local collector Ed Moran, who was told of the find by the current landowner Edward Braaten. Both of the tools originally identified at the site were collected by Mr. Braaten.

Description

The site is presently located in CRP approximately 260 m southwest of, and in the same field as, site 21RL29 (Figure 127). ALAC was taken to the site area by Moran on October 5, 2012. The general extent of the collection area was identified by Ed Moran and a pedestrian surface survey of the site area was then conducted by ALAC; however, the dense CRP resulted in virtually zero ground surface visibility and, consequently, no additional artifacts were identified. Mr. Braaten agreed to allow ALAC to examine the two artifacts collected from the site; however, a subsequent search for the specimens among his collections proved unsuccessful and he could no longer recall any specific characteristics of the artifacts.

Figure 127. Overview of general area of site 21RLr, southwestern orientation.

GEOMORPHOLOGICAL INVESTIGATION

Rolfe D. Mandel, Ph.D.

INTRODUCTION

This section of the report contains the results of the geomorphological investigation conducted in support of the cultural resources survey in the project area. The primary goal of this investigation was to determine the chronology and soil stratigraphy of Holocene alluvial fills in the Red Lake River valley. This information was in turn used to assess the geologic potential for buried prehistoric cultural deposits in the project area.

METHODS

Prior to the early 1980s, most archeologists working in Minnesota and other areas of the Midwest relied on traditional methods of surface surveys to locate prehistoric cultural deposits. These methods, such as pedestrian surveys and shallow shovel testing, rarely detect buried cultural materials. Bettis and Littke (1987:3) pointed out that inadequate subsurface sampling in stream valleys has led to significant gaps in the record of known prehistoric cultural resources, as well as erroneous conclusions about some aspects of regional cultural history. A number of studies (e.g., Bettis and Mandel 2002; Hajic et al. 2007; Mandel 2006; Mandel and Bettis 2001a) demonstrated that stream valleys in the Midwest have extensive surfaces that are geologically young (often post-dating 2000 RCYBP), and that most of the existing record of prehistoric cultures is deeply buried. They emphasized the need for understanding the age and distribution of the deposits comprising the landforms in order to adequately evaluate the landscape for cultural resources. Hence, the archeological survey of the project area included a geomorphological investigation designed to assess the potential for buried cultural resources.

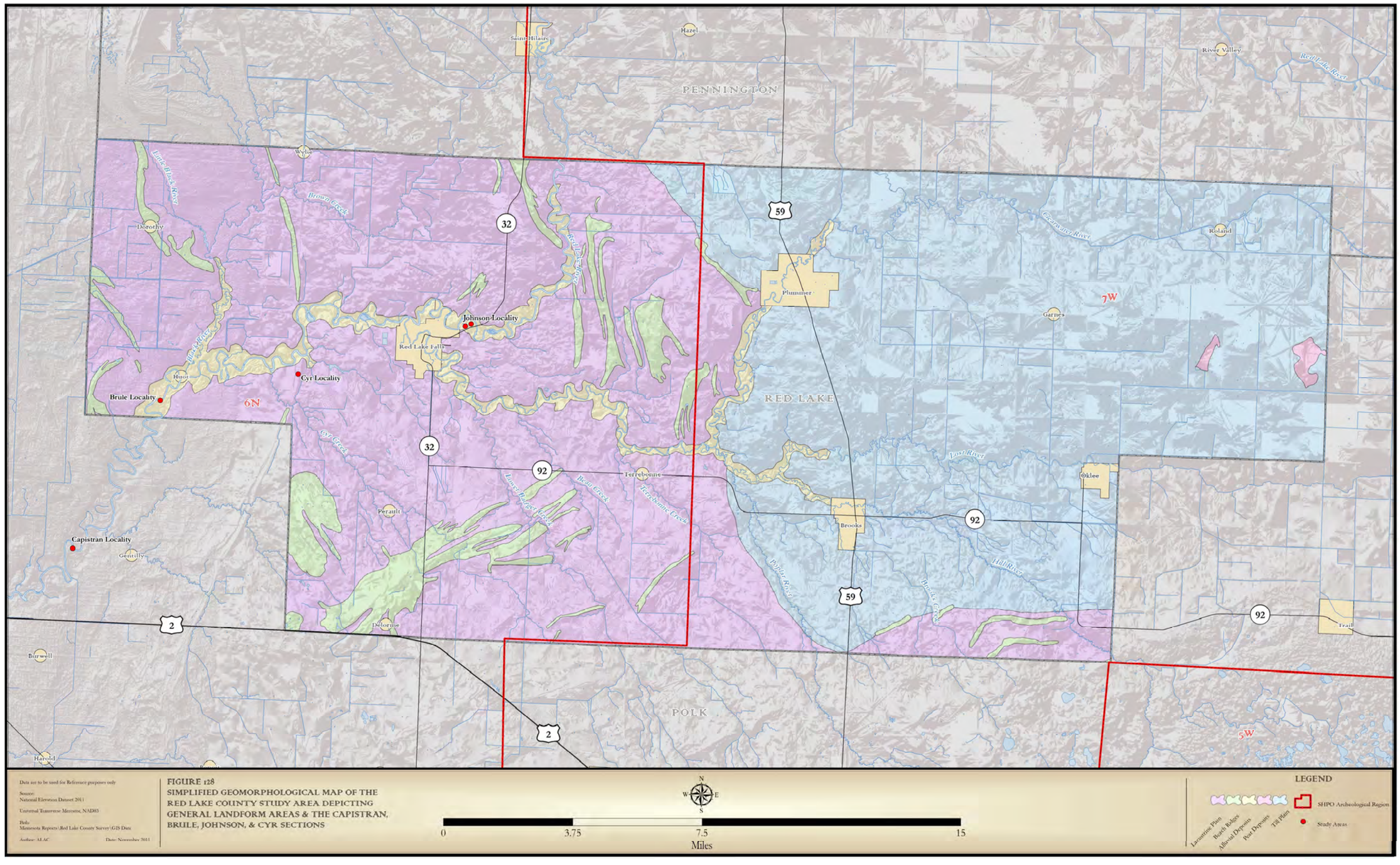
The geomorphological investigation initially involved reconnaissance of stream valleys in the project area, with a strong focus on the Red Lake River valley. Stream banks were inspected along entrenched reaches of streams in order to gain an understanding of the late-Quaternary stratigraphy.

The next phase of the field investigation involved soil-stratigraphic studies at four localities: *Capistran*, *Brule*, *Johnson*, and *Cyr* (Figure 128). With the exception of Capistran, all of the localities are in Red Lake County. The Capistran Locality is in Polk County approximately 7 km (4.3 mi) downstream from the Red Lake County line.

Next, a trailer-mounted Giddings hydraulic soil probe was used to collect five cores at the Johnson Locality near the town of Red Lake Falls. The cores were taken with a 1.23-m-long (4-ft) sampling tube that is 6.4 cm (2.5 in) in diameter. The cores were wrapped in cellophane and aluminum foil and placed in core boxes for transport to the Kansas Geological Survey, where they were split longitudinally and described.

Soils and sediments were described using standard procedures and terminology outlined by Birkeland (1999) and Schoeneberger et al. (2002). However, when multiple buried soils were present, the horizon nomenclature presented by Holliday (2004:339) was used. Specifically, the buried soils were numbered consecutively from the top of a section downward, with the number following the suffix "b." For example, the A horizons of three superposed buried soils would be numbered Ab1, Ab2, and Ab3 from top to bottom. Carbonate morphology was defined according to the classification scheme of Birkeland (1999). Graphic soil profiles were constructed to visually convey pedologic, stratigraphic, and chronologic information.

Soils were included in the stratigraphic framework of every profile that was described. Soils are important to the subdivision of Quaternary sediments, whether the soils are at the present-day land surface or buried (Birkeland 1999). After soils were identified and described, they were numbered consecutively, beginning with 1, the modern surface soil, at the top of the profile.


Saint Hilaire
Hazel
River Valley
Red Lake River
PENNINGTON
Wylie
Little Black River
Brown Creek
Dorothy
32
59
Red Lake River
Johnson Locality
Red Lake Falls
Plummer
Clearwater River
Roland
7W
Garnes
Huot
Cyr Locality
Brule Locality
6N
RED LAKE
Cyr Creek
32
92
Terrebonne
Bear Creek
Terrebonne Creek
Lower Badger Creek
Perault
Oklee
Lost River
Brooks
92
Capistran Locality
Gentilly
Poplar River
Hill River
59
Brooks Creek
2
Delorme
92
Trail
Burwell
POLK
5W
2
Harold
Data are to be used for Reference purposes only
Source:
National Elevation Dataset 2011
Universal Transverse Mercator, NAD83
Path:
Minnesota Reports\Red Lake County Survey\GIS Data
Author: ALAC
Date: November 2011
FIGURE 128
SIMPLIFIED GEOMORPHOLOGICAL MAP OF THE
RED LAKE COUNTY STUDY AREA DEPICTING
GENERAL LANDFORM AREAS & THE CAPISTRAN,
BRULE, JOHNSON, & CYR SECTIONS
N
W
E
S
0
3.75
7.5
15
Miles
LEGEND
SHPO Archeological Region
Study Areas
Lacustrine Plain
Beach Ridges
Alluvial Deposits
Peat Deposits
Till Plain

Charcoal and soil samples were submitted to the Illinois State Geological Survey (ISGS) Isotope Laboratory for radiocarbon dating. Three of the charcoal samples were assayed by conventional radiocarbon-dating methods and three were dated using accelerator mass spectrometry (AMS). None of the cores contained charcoal so the numerical ages of buried soils in the cores were determined by AMS dating of the soil organic matter (SOM). Although radiocarbon dating of SOM can be problematic (Birkeland 1999; Holliday 2004:178-183; Martin and Johnson 1995), with proper care in sampling and interpretation, SOM can provide accurate age control, especially in carbonate-rich soils (Holliday et al. 2006). Reliable dating of SOM has been demonstrated in many studies (e.g., Haas et al. 1986; Holliday et al. 1994, 1996; Mandel 1994; May and Holen 1985, 1993; Mayer and Mahan 2004; Rawling et al. 2003). In this study, the upper 10 cm of buried soils were collected and submitted to the ISGS Isotope Laboratory, where the samples underwent standard pretreatment to remove rootlets and calcium carbonate. The total decalcified soil carbon was set aside for AMS dating.

The ISGS Isotope Laboratory submitted all AMS samples to the W. M. Keck Carbon Cycle Accelerator Mass Spectrometry Laboratory at the University of California, Irvine (see Appendix C). In the text of this chapter, radiocarbon ages are reported in uncalibrated years before present (RCYBP). However, all radiocarbon ages were calibrated (Table 17) and the ages were corrected for isotopic fractionation.

Table 17. Calibrated Radiocarbon Ages.

Locality	Material Dated	Sample Depth (cmbs)	^{14}C Age (RCYBP)	Calibrated[1] Age (cal B.P.)	Median Age (cal B.P.)	δ^{13}C	Laboratory No.
Capistran	Charcoal	145-148	4130 ± 100	4531-4864	4655	-23.9	ISGS-6943
Capistran	Charcoal	168-172	4405 ± 20	4885-5042	4972	-25.7	ISGS-A2338
Brule	Charcoal	66-67	1870 ± 20	1742-1871	1820	-23.5	ISGS-A2336
Brule	Charcoal	112-116	2060 ± 20	1991-2113	2027	-25.6	ISGS-A2337
Brule	Charcoal	133-134	2190 ± 160	2043-2339	2208	-24.7	ISGS-6942
Brule	Charcoal	175-185	2430 ± 70	2347-2713	2508	-23.8	ISGS-6941
Johnson (T-0)	SOM	40-50	975 ± 20	798-933	896	-25.7	ISGS-A2369
Johnson (T-1)	SOM	105-115	4485 ± 20	5050-5287	5183	-24.5	ISGS-A2370
Johnson (T-2)	SOM	160-170	5345 ± 25	6022-6266	6127	-24.3	ISGS-A2371
Johnson (T-3)	SOM	79-89	3260 ± 20	3447-3558	3476	-24.9	ISGS-A2372

[1]Calibration to calendar years (2 sigma) was performed with CALIB 6.0 using calibration dataset INTCAL09 (Reimer et al. 2009)

Determining the Potential for Buried Cultural Deposits

In this study, determining the potential for buried cultural deposits involved consideration of soil stratigraphy and geochronology. The presence/absence of Holocene-age buried soils, especially buried A horizons, is important in the evaluation of geologic site-preservation potential (Mandel and Bettis 2001b). Buried soils represent previous land surfaces stable long enough to develop recognizable soil profile characteristics. As Hoyer (1980) pointed out, if the probability of human use of a particular landscape position was equal for each year, it follows that the surfaces that remained exposed for the longest time would represent those with the highest probability for containing cultural materials. Holocene-age buried soils identified in the study area represent these surfaces, and evidence for human occupation would most likely be associated with them. However, prehistoric cultural deposits, even rich ones, also may be found in sediment that has not been modified by soil development (Hoyer 1980; Mandel and Bettis 2001b). Hence, the presence/absence of buried soils cannot be used as the sole criterion for evaluating the potential for buried cultural materials. The mere presence of Holocene deposits beneath a geomorphic surface offers potential for buried cultural materials.

RESULTS OF INVESTIGATIONS

Capistran Locality

The Capistran Locality, which is named after the landowner, is on the south side (left bank) of the Red Lake River approximately 6.5 km (4 mi) east of Crookston, Minnesota (see Figure 128). The river has migrated laterally into the T-1 fill at this locality, forming a long, steep cutbank (Figure 129). A portion of the cutbank, referred to as the Capistran Section, was cleaned off with a shovel and described. Also, two charcoal samples were collected for radiocarbon dating.

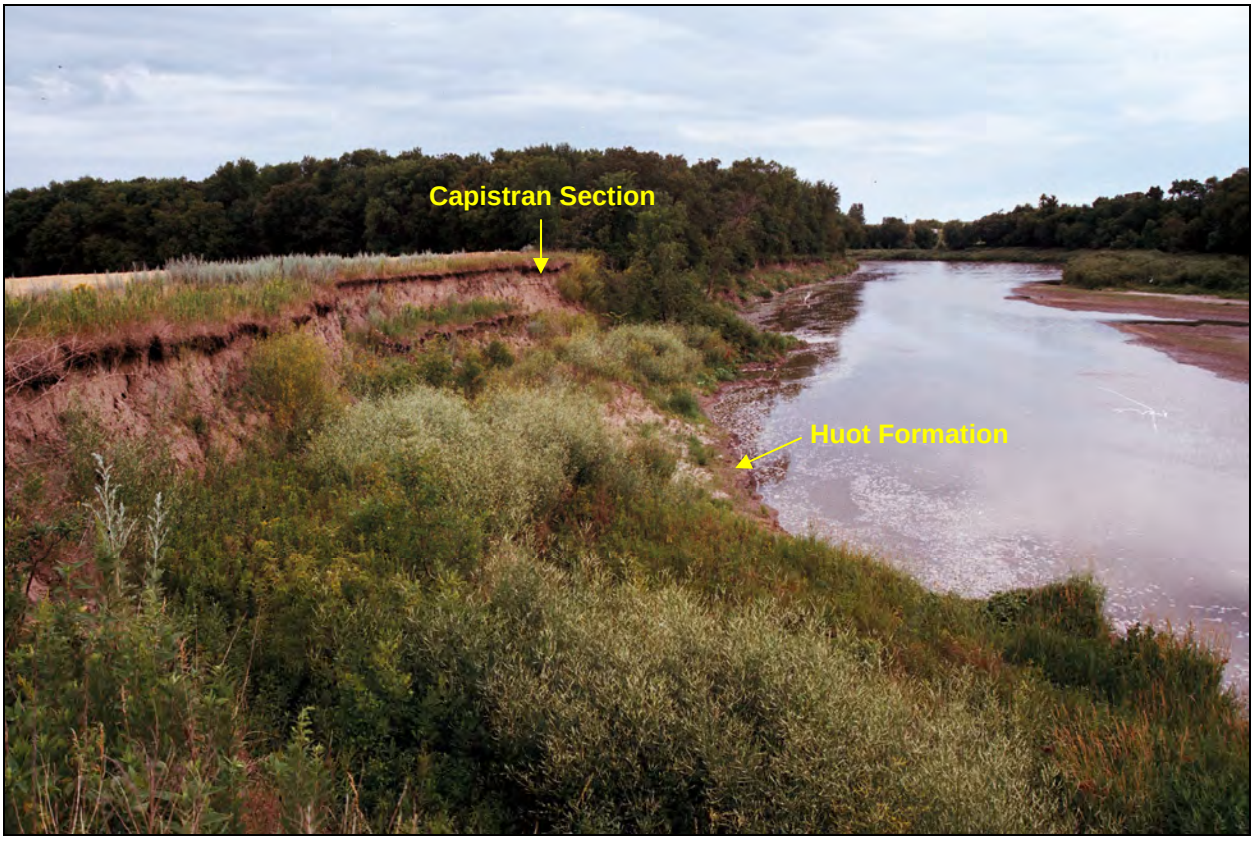


Figure 129. Photograph of the T-1 fill and underlying Huot Formation exposed in the cutbank at the Capistran Locality. The view is to the north.

In the Capistran Section, the T-1 fill consists of fine-grained alluvium, and a surface soil (Soil 1) and three buried soils (Soils 2, 3 and 4) occur in the upper 4.25 m of the fill (Figures 130 and 131). Soil 1 is 123 cm thick and has a moderately expressed A-Bw-Bk profile (Table 18). Soil 2, at a depth of 123 to 167 cmbs, has a moderately expressed Ak-Bk-BCk profile developed in an upward-fining sequence. Soils 3 and 4, at depths of 167 to 251 cmbs and 251 to 425 cmbs, respectively, also have moderately expressed Ak-Bk-BCk profiles developed in upward-fining sequences. The soils in the section are predominantly silty clay loams with brown (10YR 5/3, dry) and pale brown (10YR 6/3, dry) matrix colors and relatively weak carbonate morphology (stage I to II). The Ck horizons of Soils 3 and 4 consist of stratified fine sandy loam, loamy fine sand, and very fine sand; the individual beds are internally laminated.

Charcoal recovered from the upper half of the Akb2 horizon of Soil 3 yielded a radiocarbon age of 4405 ± 20 RCYBP. Hence, Soil 3 represents a period of floodplain stability during the transition from the middle to late Holocene. It is likely that the moderately expressed Ak-Bk-BCk profile of Soil 3 is a product of about 500-600 years of pedogenesis, so Soil 4 probably was buried about 5,000 years ago and therefore represents a middle-Holocene geomorphic surface. A radiocarbon age of 4130 ± 100 determined on charcoal 22-25 cm above the top of the Akb2 horizon indicates that Soil 3 was buried soon after ca. 4400 RCYBP and that the upper 1.45 m of the T-1 fill aggraded after ca. 4100 RCYBP.

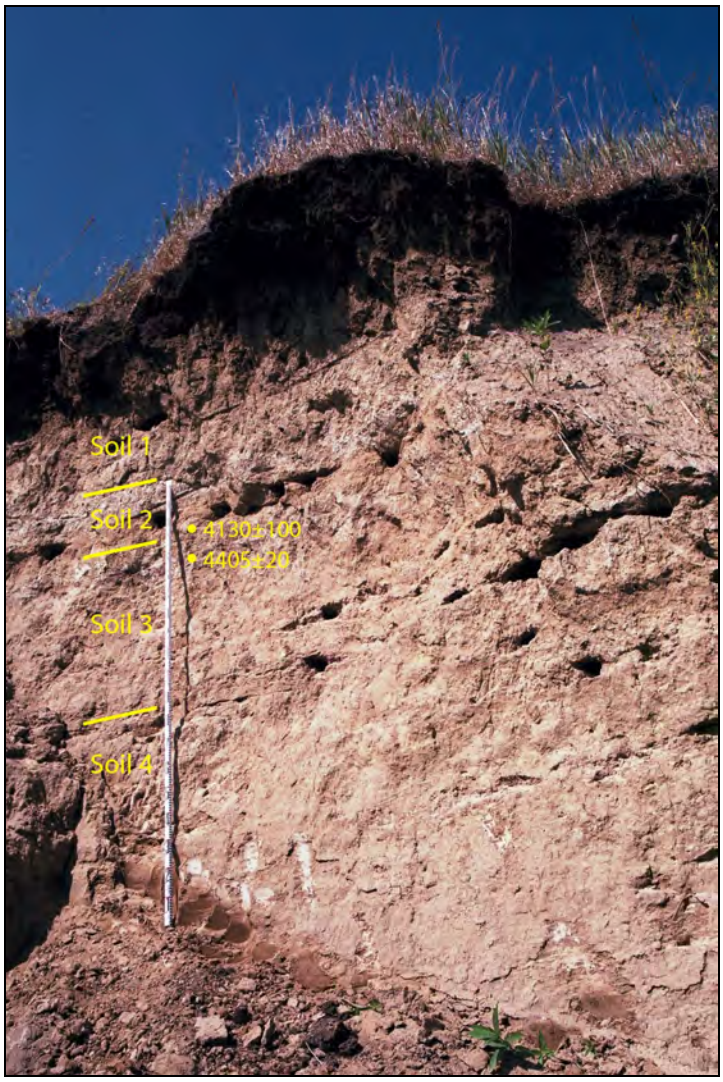


Figure 130. Photograph of the Capistran Section showing the soil stratigraphy. The radiocarbon ages were determined on charcoal. The view is to the west.

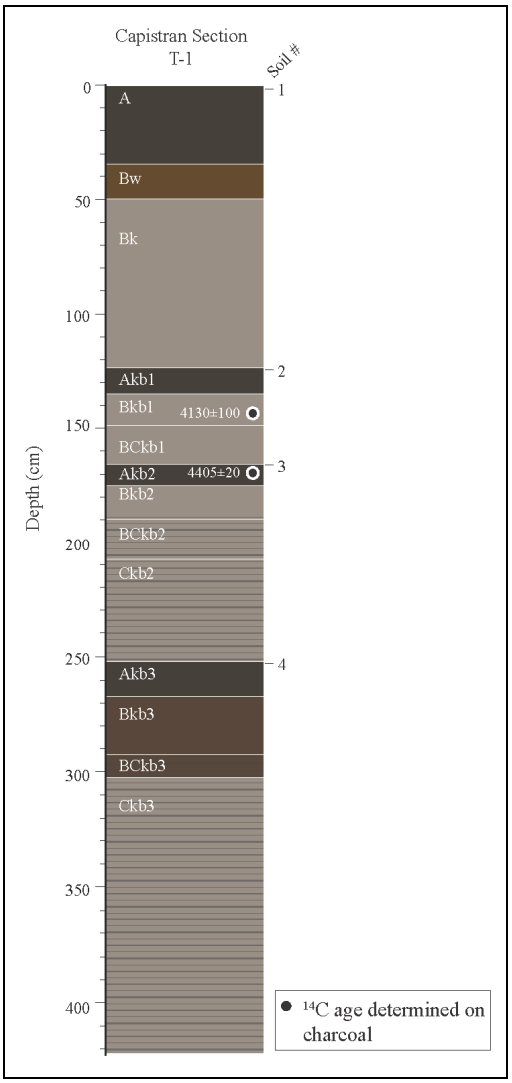


Figure 131. Diagram of the Capistran Section showing the soil stratigraphy, horizonation, and radiocarbon chronology.

Table 18. Description of Capistran Section, Red Lake River Valley, Polk County.

Landform: T-1
Slope: 1 percent
Drainage class: Well-drained
Land cover: Cropland
Remarks: Charcoal collected at depths of 145-148 cmbs and 168-172 cmbs yielded radiocarbon ages of 4130 ± 100 and 4405 ± 20 RCYBP, respectively.

Depth (cm)	Soil Horizon	Description
		Soil 1
0-36	A	Very dark gray (10YR 3/1) silty clay loam, black (10YR 2/1) moist; weak fine subangular blocky structure parting to weak fine granular; hard, friable; many fine and very fine roots; many worm casts and open worm and insect burrows; many very fine pores; gradual smooth boundary.

Table 18 (continued).

36-50	Bw	Brown (10YR 5/3) silty clay loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate fine subangular blocky; hard; many fine and very fine roots; many worm casts and open worm and insect burrows; many very fine pores; gradual smooth boundary.
50-123	Bk	Pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate fine prismatic; very hard; common (10%) threads of calcium carbonate; few (1%) fine strongly cemented calcium carbonate nodules; few fine and medium roots; many worm casts and open worm and insect burrows; many very fine and fine pores; abrupt wavy boundary.
		Soil 2
123-135	Akb1	Gray (10YR 5/1) silty clay loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure parting to moderate coarse granular; hard; common (10%) coarse threads of calcium carbonate; few (1%) fine strongly cemented calcium carbonate nodules; few fine and medium roots; common worm casts and open worm and insect burrows; many fine and very fine pores; gradual smooth boundary.
135-150	Bkb1	Pale brown (10YR 6/3) silty clay loam; brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate fine prismatic; very hard; many (20%) threads of calcium carbonate; few (1%) fine strongly cemented calcium carbonate nodules; few fine roots; many worm casts and open worm and insect burrows; common charcoal fragments in the lower 5 cm of the horizon; many very fine and fine pores; gradual smooth boundary.
150-167	BCkb1	Pale brown (10YR 6/3) loam; brown (10YR 5/3) moist; weak medium prismatic structure parting to weak fine prismatic; hard; common (10%) threads of calcium carbonate; few (1%) fine very strongly cemented calcium carbonate nodules; faint bedding; few fine roots; few worm casts and open worm and insect burrows; common very fine and fine pores; abrupt wavy boundary.
		Soil 3
167-175	Akb2	Dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; weak fine subangular blocky structure parting to weak fine granular; hard; many (20%) threads of calcium carbonate; many charcoal fragments; common fine and very fine roots; common worm casts and open worm and insect burrows; many very fine and common fine pores; gradual smooth boundary.
175-190	Bkb2	Pale brown (10YR 6/3) silty clay loam; brown (10YR 5/3) moist; weak fine subangular blocky structure; hard; many (20%) threads of calcium carbonate; few fine and very fine roots; common worm casts and open worm and insect burrows; many very fine and common fine pores; gradual smooth boundary.
190-209	BCkb2	Faintly laminated pale brown (10YR 6/3) loam, fine sandy loam, and loamy fine sand, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard; common (10%) threads of calcium carbonate; few very fine roots; few worm casts and open worm and insect burrows; common fine and very fine pores; abrupt smooth boundary.
209-251	Ckb2	Stratified pale brown (10YR 6/3), brown (10YR 5/3) and grayish brown (10YR 5/2) fine sandy loam, loamy fine sand, and very fine sand, brown (10YR 5/3 and 4/3) and dark grayish brown (10YR 4/2) moist; massive parting to single grain; hard, loose; beds are internally laminated; few (1%) threads of calcium carbonate; few very fine roots; few worm casts and open worm and insect burrows; few medium and fine pores; abrupt wavy boundary.

Table 18 (continued).

		Soil 4
251-266	Akb3	Grayish brown (10YR 5/2) loam, dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure parting to weak fine granular; hard; many (20%) threads of calcium carbonate; few very fine roots; few worm casts and open worm and insect burrows; common fragments of wood charcoal; many very fine and common fine pores; gradual smooth boundary.
266-291	Bkb3	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard; common (10%) films of calcium carbonate; many fine and very fine roots; few worm casts and open worm and insect burrows; few medium and common very fine pores; gradual smooth boundary.
291-301	BCkb3	Faintly laminated brown (10YR 5/3) loam and very fine sandy loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard; common (10%) films of calcium carbonate; many fine and very fine roots; few worm casts and open worm and insect burrows; few medium and common very fine pores; gradual smooth boundary.
301-425+	Ckb3	Stratified brown pale brown (10YR 6/3), brown (10YR 5/3) and grayish brown (10YR 5/2) fine sandy loam, loamy fine sand, and very fine sand, brown (10YR 5/3 and 4/3) and dark grayish brown (10YR 4/2) moist; few fine distinct brown (7.5YR 5/3) mottles; massive parting to single grain; hard, loose; beds are internally laminated; few (1%) threads of calcium carbonate; few very fine roots; few worm casts and open worm and insect burrows; few coarse and medium and common fine and very fine pores.

The lower 2 to 3 m of the cutbank could not be described because large slump blocks mantle them. However, gray, clay-rich till containing a few pebbles was visible at river level (see Figure 129). The till is the Huot Formation, which commonly occurs in eastern Polk County. Hence, the package of middle and late-Holocene alluvium comprising the T-1 fill unconformably rests on late-Wisconsinan till.

Based on the soil stratigraphy and radiocarbon chronology, there is high potential for stratified Middle and Late Archaic cultural deposits in the T-1 fill at the Capistran Locality. Middle Archaic cultural deposits are most likely to be associated with Soils 3 and 4, and archeological materials dating to the Late Archaic period may occur in Soils 1 and 2. Although the numerical age of the T-1 surface at the Capistran Locality is unknown, the magnitude of surface-soil development suggests that this geomorphic surface has been stable for at least 500 years. Hence, it is reasonable to assume that Woodland-period cultural deposits may occur on the T-1.

Brule Locality

The Brule Locality is approximately 1.4 km southeast of the community of Huot, Minnesota (see Figures 51, 52, and 128). The T-1 fill is exposed in several long cutbanks on the Brule property immediately south of where County Road 3 crosses the Red Lake River (Figures 132 and 133). A portion of one those cutbanks, designated here as the Brule Section (Figure 134), was cleaned off with a shovel and described. Also, four charcoal samples were collected for radiocarbon dating.

A surface soil (Soil 1) and three buried soils (Soils 2, 3 and 4) occur in the upper 4.5 m of the T-1 fill at Brule (Figures 135 and 136). Soil 1 is 54 cm thick and has a moderately expressed Ap-Ak-Bk profile (Table 19). Soils 2 and 3, at depths of 54 to 112 cmbs and 112 to 175 cmbs, respectively, also have moderately expressed Ak-Bk-BCk profiles. Soil 4, with its dark grayish brown (10YR 4/2, dry) color, is the most conspicuous buried soil in the section (see Figure 135), but it has a weakly expressed Ak-ACk-Ck profile. The organic-rich matrix and strong mottling in the Akb3 and ACkb3 horizons are indicative of a soil that was frequently saturated, i.e., a former floodplain or wetland. The Ckb3 horizon of Soil 4 reaches a depth of 450 cmbs and consists of stratified grayish brown (10YR 5/2, dry) silty clay loam. Carbonate morphology is relatively weak throughout the section, ranging from stage I to II.

Figure 132. Photograph of a cutbank at the Brule Locality. The view is to the south.

Figure 133. Photograph of a cutbank at the Brule Locality. The Brule Section is to the right of the person in the photo. The view is to the north.

Figure 134. Photograph of the T-1 fill and underlying Huot Formation exposed in the cutbank at the Brule Locality. A 2-m-long photo scale is leaning against the Brule Section. The view is to the north.

A suite of four radiocarbon ages provides a numerical chronology for the T-1 fill exposed in the Brule Section. Charcoal recovered from the upper 10 cm of the Akb3 horizon of Soil 4 yielded a radiocarbon age of 2430 ± 70 RCYBP. Hence, Soil 4 represents a geomorphic surface that was relatively stable around 2400 RCYBP. However, because Soil 4 is weakly developed (Ak-ACk-Ck profile), it is likely that the period of stability lasted only about 100 years. Also, given the rapid rates of late-Holocene alluviation in the Red Lake River valley, the sediment comprising Soil 4 probably aggraded after ca. 3000 RCYBP.

A thick lens of wood charcoal in the Bkb2 horizon of Soil 3 was dated to 2190 ± 160 RCYBP (see Figure 135), and charcoal from the Akb2 horizon of Soil 3 yielded a radiocarbon age of 2060 ± 20 RCYBP. Hence, Soil 4 was buried sometime between ca. 2400 and 2200 RCYBP and the late-Holocene floodplain stabilized again between ca. 2200 and 2050 RCYBP. Charcoal from the Akb1 horizon of Soil 2 yielded a radiocarbon age of 1870 ± 20 RCYBP, so the period of floodplain stability represented by Soil 3 was interrupted by alluviation soon after 2050 RCYBP, and was followed by another episode of stability and soil formation at ca. 1850 RCYBP. A final episode of alluviation on the late-Holocene floodplain occurred after ca. 1850 RCYBP and resulted in the burial of Soil 2. It is likely that the Red Lake River underwent a period of incision between ca. 1850 and 1000 RCYBP, thereby transforming the late-Holocene floodplain into a terrace. Evidence at the Johnson Locality, which is described later in this chapter, suggests that the modern floodplain (T-0) was aggrading soon before 1000 RCYBP.

The recent age of the T-1 fill exposed in the Brule Section is intriguing. Whereas most, if not all, of the T-1 fill at Brule is less than 3,000 years old, the T-1 fill in the Capistran Section dates back to at least 4400 RCYBP and probably began to aggrade around 5000 RCYBP. Also, the T-1 fill at Brule is sandier and browner than the T-1 fill at Capistran. Hence, there may be laterally inset alluvial fills beneath the T-1 surface, with only one fill exposed in the cutbanks at the Brule and Capistran localities. Another explanation for the temporal and lithologic variability is that middle and early late-Holocene alluvium is preserved beneath T-1 at Capistran but was completely removed by stream erosion and replaced with late-Holocene alluvium at Brule.

The late-Holocene alluvium at Brule unconformably rests on glacial till comprising the Huot Formation (see Figures 134 and 136). The till consists of dark gray (10YR 4/1, dry) clay with few (1 percent) rounded to sub-rounded pebbles scattered through the fine-grained matrix. The abundance of expandable clay minerals in the till has created an angular blocky structure and distinct slickensides (10 percent). The numerical age of the Huot Formation is unknown, but Harris et al. (1974) suggest that it aggraded around 13,500 years ago.

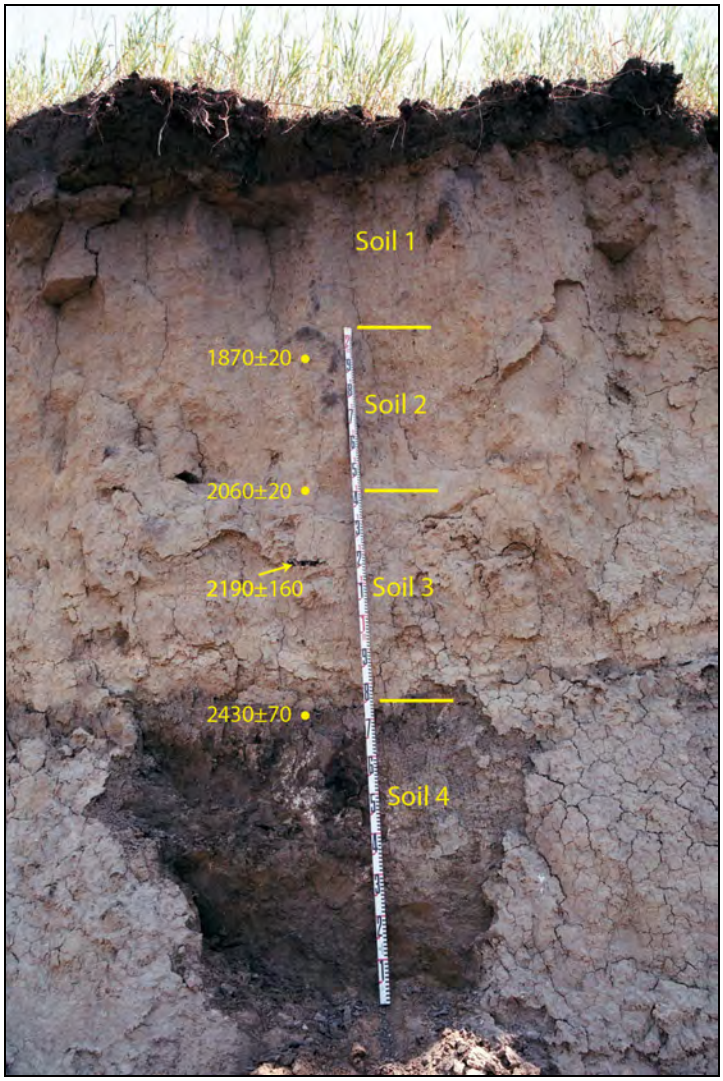


Figure 135. Photograph of the Brule Section showing the soil stratigraphy. The radiocarbon ages were determined on charcoal. The view is to the east.

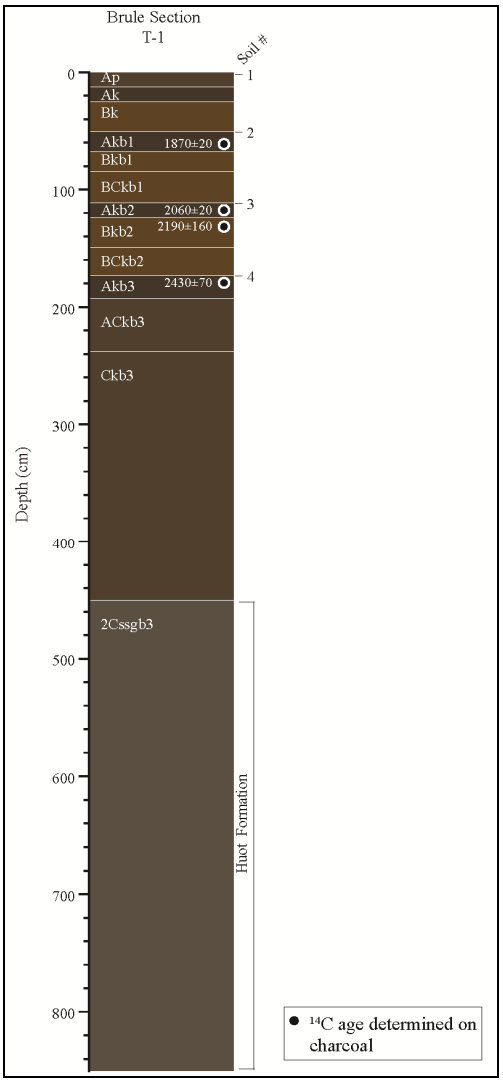


Figure 136. Diagram of the Brule Section showing the soil stratigraphy, horizonation, and radiocarbon chronology.

Table 19. Description of Brule Section, Red Lake River Valley, Red Lake County.

Landform: T-1
Slope: 1 percent
Drainage class: Well-drained
Land cover: Cropland
Remarks: Charcoal collected at depths of 66-67 cmbs, 112-116 cmbs, 133-134 cmbs and 175-185 cmbs yielded radiocarbon ages of 1870 ± 20, 2060 ± 20, 2190 ± 160, and 2430 ± 70 RCYBP, respectively.

Depth (cm)	Soil Horizon	Description
		Soil 1
0-15	Ap	Grayish brown (10YR 5/2) very fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, friable; many fine and very fine and few medium roots; many worm casts and open worm and insect burrows; few fine and medium pores; abrupt smooth boundary.
15-25	Ak	Dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to weak fine granular; slightly hard, friable; few (1%) very fine threads of calcium carbonate; many fine and very fine and few medium roots; many worm casts and open worm and insect burrows; common fine and many very fine pores; gradual smooth boundary.
25-54	Bk	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard; many (20%) fine soft masses and common (10%) threads of calcium carbonate; common fine and very fine and few medium roots; many worm casts and open worm and insect burrows; common fine and many very fine pores; clear smooth boundary.
		Soil 2
54-68	Akb1	Grayish brown (10YR 5/2) loam, dark grayish brown (10YR 4/2) moist; weak fine subangular blocky structure parting to moderate coarse and medium granular; hard; many (20%) fine soft masses and common (10%) threads of calcium carbonate; common fine and very fine and few medium roots; many worm casts and open worm and insect burrows; common fragments of wood charcoal; common fine and many very fine pores; gradual smooth boundary.
68-84	Bkb1	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard; common (10%) fine soft masses and few (1%) threads of calcium carbonate; common fine and very fine roots; common worm casts and open worm and insect burrows; common fine and many very fine pores; gradual smooth boundary.
84-112	BCkb1	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak fine subangular blocky structure; slightly hard; faint bedding; common (10%) fine soft masses and few (1%) threads of calcium carbonate; few fine and very fine roots; common worm casts and open worm and insect burrows; common fine and many very fine pores; abrupt smooth boundary.
		Soil 3
112-122	Akb2	50% brown (10YR 5/3) loam, brown (10YR 4/3) moist, 50% dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure parting to moderate coarse and medium granular; slightly hard; few (1%) fine soft masses and common (10%) threads of calcium carbonate; few fine and very fine roots; common worm casts and open worm and insect burrows; common fragments of wood charcoal; common fine and very fine pores; gradual smooth boundary.

Table 19 (continued).

122-149	Bkb2	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; weak medium subangular blocky structure parting to weak fine subangular blocky; slightly hard; common (10%) fine soft masses and few (1%) threads of calcium carbonate; few fine and very fine roots; common worm casts and open worm and insect burrows; common fragments of wood charcoal; common fine and many very fine pores; gradual smooth boundary.
149-175	BCkb2	Faintly laminated brown (10YR 5/3) loam, brown (10YR 4/3) moist and dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; few fine distinct reddish yellow (7.5YR 6/8), strong brown (7.5YR 5/6 and 5/8) and gray (10YR 5/1) mottles; weak fine subangular blocky structure parting to weak very fine subangular blocky; slightly hard; common (10%) fine soft masses and few (1%) threads of calcium carbonate; few fine and medium roots; common worm casts and open worm and insect burrows; common fragments of wood charcoal; common fine and many very fine pores; abrupt smooth boundary.
		Soil 4
175-195	Akb3	Dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; upper 2 cm are dark gray (10YR 4/1), very dark gray (10YR 3/1) moist; common fine distinct strong brown (7.5YR 5/6) and gray (10YR 5/1) mottles; weak fine subangular blocky structure parting to weak fine granular; slightly hard; common (10%) films and many (20%) fine soft masses of calcium carbonate; few fine and medium roots; many worm casts and open worm and insect burrows; common fragments of wood charcoal; common gastropod shells; common fine and many very fine pores; gradual smooth boundary.
195-240	ACkb3	Dark grayish brown (10YR 4/2) fine gravelly loam, very dark grayish brown (10YR 3/2) moist; common fine distinct strong brown (7.5YR 5/6) and gray (10YR 5/1) mottles; weak fine subangular blocky structure parting to weak very fine subangular blocky; slightly hard; common (10%) films and many (20%) fine soft masses of calcium carbonate; few very fine roots; common worm casts and open worm and insect burrows; common gastropod shells; common fine and many very fine pores; abrupt smooth boundary.
240-450	Ckb3	Stratified grayish brown (10YR 5/2) silty clay loam, dark grayish brown (10YR 4/2) moist; few prominent red (2.5YR 4/6 and 4/8), common fine faint yellowish brown (10YR 5/6) and gray (10YR 5/1), and many medium distinct strong brown (7.5YR 5/6 and 5/8) mottles; massive; slightly hard; few (1%) threads and common (10%) fine soft masses of calcium carbonate; few (1%) fine, hard calcium carbonate nodules; few very fine roots; few worm casts and open worm and insect burrows; common gastropod shells; common fine and many very fine pores; abrupt smooth boundary.
		Lacustrine Deposit
450-850+	2Cssgb3	Dark gray (10YR 4/1) clay, very dark gray (10YR 3/1) moist; coarse angular blocky structure parting to fine angular blocky; very hard, very firm; few (10%) slickensides; few (1%) rounded to sub-rounded pebbles scattered through the matrix.

Based on the soil stratigraphy and radiocarbon chronology, there is high potential for stratified Late Archaic and Initial through Middle Woodland cultural deposits in the late-Holocene alluvium comprising the T-1 fill at Brule. Late Archaic cultural deposits are most likely to be associated with Soil 4, and archeological materials dating to the Woodland period may occur in Soils 1, 2 and 3. The T-1 surface post-dates ca. 1800 RCYBP and probably is no more than 1,000 years old. Therefore, only Middle Woodland and younger cultural deposits will occur on T-1.

Johnson Locality

The Johnson Locality is 0.3-0.5 km northeast of the town of Red Lake Falls (see Figures 95, 96, and 128). This locality appears to have the entire sequence of alluvial terraces of the Red Lake River preserved on the inside of a broad meander loop (Figure 137). The lowest geomorphic surface, the modern floodplain (T-0), dominates the valley floor and is mostly at an elevation of 296.3-296.9 m (972-974 ft) above mean sea level (amsl); natural levees on T-0 are as high as 297.5 m (976 ft) amsl. During a flood event, the Red Lake River breached the natural levee on the west side of the meander loop and formed a crevasse splay that mantles most of the eastern two-thirds of the T-0 surface (see Figure 137). A moderately steep, 2-m-high scarp separates the T-0 and T-1 surfaces. The T-1 surface is mostly 298.1 m (978 ft) amsl, though the surfaces of flood scours on T-1 are as low as 296.9 m (974 ft) amsl. A nearly vertical 5-m-high scarp separates the T-1 and T-2 surfaces. A flight of high terraces – T-2, T-3, and T-4 – is tucked against the valley wall on the inside of the meander loop (Figure 138; see Figure 137). The elevations of the T-2, T-3, and T-4 surfaces are 301.1-301.8 m (988-990 ft), 302.4-303.0 m (992-994 ft), and 303.6-304.2 m (996-998 ft) amsl, respectively.

One core was taken from the floodplain and from each of the terraces, for a total of five at the Johnson Locality (see Figure 137). The results of the coring and core analysis are presented below.

Core 1

Core 1 was taken on T-0 and reached a depth of 2 m before intercepting material (coarse gravel?) that caused refusal. Two strata comprise the upper 2 m of the T-0 fill: a 40-cm-thick top stratum consisting of very fine sandy loam, and a 160-cm-thick bottom stratum mostly comprised of sand, loamy fine sand, and very fine sandy loam. The top stratum has been slightly modified by pedogenesis, as indicated by the presence of a surface soil (Soil 1) with a weakly expressed Ap-AC-C profile (Figure 139; Table 20). Faint bedding appears at a depth of only 20 cmbs (AC horizon), and there is distinct bedding (laminated) from 28 to 40 cmbs (C horizon). An abrupt boundary separates the top stratum from a buried soil (Soil 2) developed in the bottom stratum.

Soil 2 has a thin, weakly expressed Ak-Bk-BCk profile developed in a fining-upward sequence (see Figure 139; Table 20). The Ak horizon is 10 cm thick and consists of dark grayish brown (10YR 4/2, dry) silt loam. Grayish brown (2.5Y 5/2, dry) very fine sandy loam, comprising the Bkb horizon, grades downward to a light yellowish brown (2.5Y 6/3, dry) loamy fine sand that comprises the BCkb horizon. Strong mottling indicative of frequent wetting (reduction) and drying (oxidation) occurs in the Akb, Bkb and BCkb horizons, and carbonate morphology is relatively weak (stages I-II). The alluvium is stratified below a depth of 72 cmbs (multiple C horizons), and consists of sand, loamy fine sand, and fine sandy loam.

SOM from the upper 10 cm of Soil 2 yielded an AMS radiocarbon age of 975 ± 20 RCYBP. Hence, Soil 2 represents a buried floodplain surface that was relatively stable about 1,000 years ago. However, because Soil 2 is only 32 cm thick and weakly developed, it is a product of no more than about 200-300 years of stability. The numerical age of the top stratum is unknown, but the magnitude of surface-soil development (thin Ap-AC profile) suggests that the upper 40 cm of the T1 fill aggraded during the Historic period.

Based on the soil stratigraphy and radiocarbon age determined on SOM, there is high potential for Late Woodland cultural deposits on and within Soil 2. Also, Historic-period cultural deposits may occur on the surface of Soil 2 and within the top stratum; there is no potential for in situ prehistoric archeological materials on the modern T-0 surface.

Core 2

Core 2 was taken on the T-1 terrace and reached a depth of 2 m before ending in a gravel bar that starts at a depth of 185 cmbs. Two strata comprise the T-1 fill above the gravel bar: a 105-cm-thick top stratum mostly consisting of silt loam and an 80-cm-thick middle stratum of loamy and sandy alluvium. A surface soil with a moderately expressed A-Bw-Bk-Ck profile is developed in the top stratum (see Figure 139; Table 21). The Ap and A horizons have a combined thickness of 30 cm and consist of very dark grayish brown (10YR 3/2, dry) silt loam. The subsoil is brown (10YR 4/3 and 5/3) and light olive brown (2.5Y 5/3, dry) silt loam, and evidence for secondary accumulation of calcium carbonate begins at a depth of 60 cmbs. Carbonate morphology is relatively weak, ranging from stage I to II in the Bk horizons. A bed of very fine sandy loam and gravel (Ck horizon) comprises the lower 10 cm of the top stratum and mantles a truncated soil (Soil 2) developed in the middle stratum.

Location Information Edited

FIGURE 137

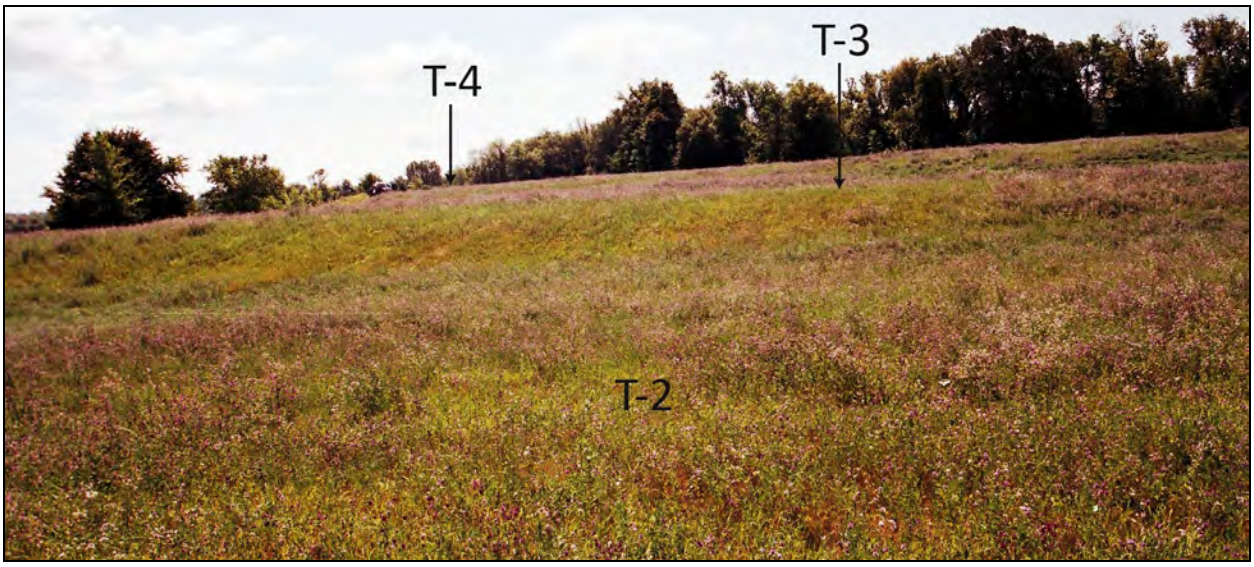


Figure 138. Photograph of the high terraces at the Johnson Locality. The view is to the south.

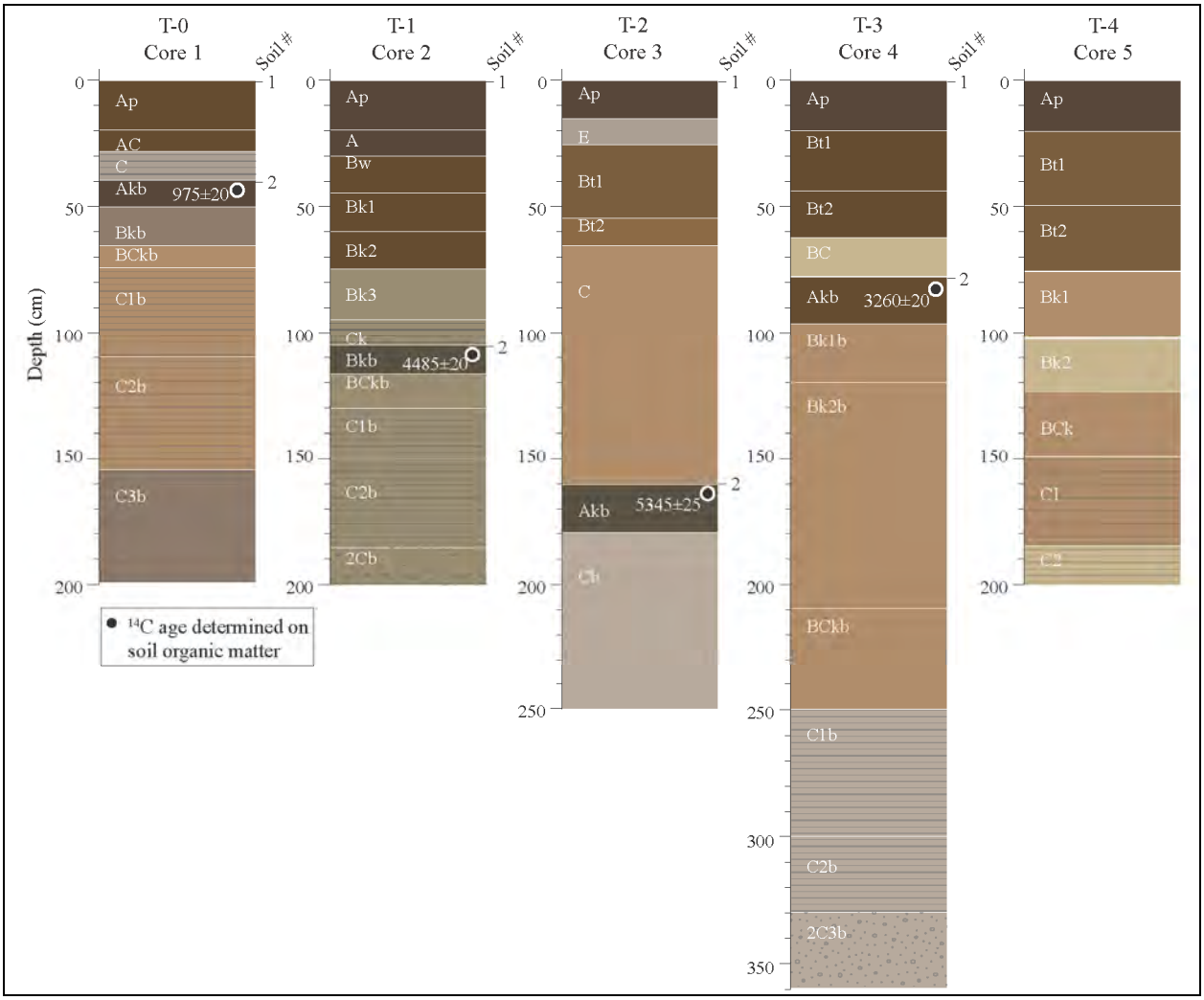


Figure 139. Diagram of the cores from the Johnson Locality showing the soil stratigraphy, horizonation, and radiocarbon chronology.

Table 20. Description of Core 1, Johnson Locality, Red Lake River Valley, Red Lake County.

Landform: T-0
Slope: 1 percent
Drainage class: Well-drained
Land cover: Alfalfa
Remarks: Soil organic matter from the upper 10 cm of Soil 2 yielded a radiocarbon age of 975 ± 20 RCYBP.

Depth (cm)	Soil Horizon	Description
		Soil 1
0-20	Ap	Brown (10YR 4/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; hard, friable; many fine and very fine roots; common worm casts and open worm and insect burrows; abrupt boundary.
20-28	AC	Brown (10YR 5/3) very fine sandy loam, brown (10YR 4/3) moist; very weak fine granular structure; hard, friable; faint bedding; many fine and very fine roots; few worm casts and open worm and insect burrows; gradual boundary.
28-40	C	Laminated pale brown (10YR 6/3) to brown (10YR 5/3) very fine sandy loam, brown (10YR 4/3) moist; massive; hard, friable; common fine and very fine roots; few worm casts and open worm and insect burrows; abrupt boundary.
		Soil 2
40-50	Akb	Dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; common fine distinct brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure parting to weak fine granular; hard, friable; few fine threads and very fine flecks of calcium carbonate; common fine and very fine roots; common worm casts and open worm and insect burrows; gradual boundary.
50-65	Bkb	Grayish brown (2.5Y 5/2) very fine sandy loam, dark grayish brown (2.5Y 4/2) moist; common fine distinct brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; weak fine subangular blocky structure; hard, friable; common fine threads and very fine and fine soft masses of calcium carbonate; few films of calcium carbonate; common very fine roots; common worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
65-72	BCkb	Light yellowish brown (2.5Y 6/3) loamy fine sand, light olive brown (2.5Y 5/3) moist; common fine distinct brownish yellow (10YR 6/8) and strong brown (7.5YR 5/8) mottles; very weak fine subangular blocky structure; slightly hard, friable; few fine threads and fine soft masses of calcium carbonate; few films of calcium carbonate; few very fine roots; few worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
72-110	C1b	Stratified light yellowish brown (2.5Y 6/3) and light olive brown (2.5Y 5/3) fine and medium sand, light olive brown (2.5Y 5/3) moist; single grain, loose; abrupt boundary.
110-155	C2b	Stratified light yellowish brown (2.5Y 6/3) and light olive brown (2.5Y 5/3) medium and coarse sand; light olive brown (2.5Y 5/3) moist; single grain, loose; abrupt boundary.
155-200	C3b	Laminated grayish brown (10YR 5/2 and 2.5Y 5/2) fine sandy loam and loamy fine sand, dark grayish brown (10YR 4/2 and 2.5Y 4/2) moist; common fine distinct strong brown (7.5YR 4/6 and 5/6) and yellowish red (5YR 4/6) mottles; massive parting to single grain; very soft.

Table 21. Description of Core 2, Johnson Locality, Red Lake River Valley, Red Lake County.

Landform: T-1
Slope: 1 percent
Drainage class: Well-drained
Land cover: Alfalfa
Soil organic matter from the upper 10 cm of Soil 2 yielded a radiocarbon age of 4485 ± 20 RCYBP.

Depth (cm)	Soil Horizon	Description
		Soil 1
0-20	Ap	Very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; hard, friable; many fine and very fine roots; many worm casts and open worm and insect burrows; abrupt boundary.
20-30	A	Very dark grayish brown (10YR 3/2) silt loam, very dark brown (10YR 2/2) moist; weak fine granular structure; hard, friable; many fine and very fine roots; many worm casts and open worm and insect burrows; gradual boundary.
30-45	Bw	Brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard, friable; many fine and very fine and few medium roots; many worm casts and open worm and insect burrows; gradual boundary.
45-60	Bk1	Brown (10YR 4/3) silt loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard, friable; common fine flecks of calcium carbonate; many fine and very fine and few medium roots; many worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
60-75	Bk2	Brown (10YR 5/3) silt loam, brown (10YR 4/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard, friable; common films, threads and fine flecks of calcium carbonate (5%); common fine and very fine and few medium roots; common worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
75-95	Bk3	Light olive brown (2.5Y 5/3) silt loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable; many films and threads of calcium carbonate (30-35%); common fine and very fine roots; common worm casts and open worm and insect burrows; many very fine and common fine pores; clear boundary.
95-105	Ck	Stratified light olive brown (2.5Y 5/3) fine sandy loam interbedded with gravel, olive brown (2.5Y 4/3) moist; gravel clasts are up to 4 cm in diameter; single grain, loose; common films and threads of calcium carbonate (5-10%); abrupt boundary.
		Soil 2
105-118	Bkb	Light olive brown (2.5Y 5/3) loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate fine prismatic; very hard, friable; many films and threads of calcium carbonate (40-45%); few very fine roots; few worm casts and open worm and insect burrows; many very fine and common fine pores; gradual boundary.
118-130	BCkb	Light olive brown (2.5Y 5/3) very fine sandy loam, olive brown (2.5Y 4/3) moist; common fine faint strong brown (7.5YR 4/6) mottles; very weak medium prismatic structure parting to very weak fine subangular blocky; slightly hard, friable; many films and threads of calcium carbonate (20-25%); few very fine roots; few worm casts and open worm and insect burrows; many very fine and common fine pores; gradual boundary.

Table 21 (continued).

130-150	C1b	Laminated light olive brown (2.5Y 5/3), light yellowish brown (2.5Y 6/3), and pale yellow (2.5Y 7/3) loamy fine sand and fine sand, olive brown (2.5Y 4/3) and light olive brown (2.5Y 5/3) moist; common fine faint brownish yellow (10YR 6/6), strong brown (7.5YR 4/6) and yellowish red (5YR 4/6) mottles; massive parting to single grain; soft and loose; few very fine roots; gradual boundary.
150-185	C2b	Stratified light olive brown (2.5Y 5/3) medium and coarse sand, olive brown (2.5Y 4/3) moist; single grain, loose; interbedded with greenish gray (5BG 5/1) silty clay loam; abrupt boundary.
185-200	2Cb	Coarse gravel; single grain, loose.

Soil 2 has a moderately expressed Bk-BCk-C profile developed in an upward-fining sequence. The Bkb horizon is 13 cm thick and consists of light olive brown (2.5Y 5/3, dry) loam; the A horizon was stripped off by stream erosion before Soil 2 was buried. Secondary accumulation of calcium carbonate (stage II+) has whitened nearly half the matrix of the Bkb horizon. Light olive brown (2.5Y 5/3, dry) very fine sandy loam comprising the BCkb horizon grades downward into laminated loamy fine sand and fine sand (C1b horizon). The lower 35 cm of the middle stratum (C2b horizon) consists of stratified, light olive brown (2.5Y 5/3, dry) medium and coarse sand interbedded with greenish gray (5BG 5/1, dry) silty clay loam. An abrupt boundary separates the middle stratum from the underlying coarse gravel.

SOM from the upper 10 cm of Soil 2 yielded a radiocarbon age of 4485 ± 20 RCYBP. Hence, Soil 2 represents a period of landscape stability during the transition from the middle to late Holocene. A similar radiocarbon age, 4405 ± 20 RCYBP, was determined on charcoal from the upper 5 cm of Soil 3 in the T-1 fill at the Capistran Locality. Given the radiocarbon ages determined on SOM from the buried soils in the T-1 and T-0 fills, the top stratum in Core 2 aggraded sometime between ca. 4500 and 1000 RCYBP.

Based on the soil stratigraphy and radiocarbon chronology, there is high potential for stratified Middle and Late Archaic cultural deposits in the T-1 fill at the Johnson Locality. Middle Archaic cultural deposits are most likely to be associated with Soil 2, and Late Archaic and/or Woodland archeological materials may be in the top stratum. Although the numerical age of the T-1 surface at the Johnson Locality is unknown, it has been stable for at least 1,000 years. Hence Woodland-period cultural deposits are likely to occur on T-1.

Core 3

Core 3 was taken on the T-2 terrace and revealed that two strata comprise the upper 2.5 m of the T-3 fill. The top stratum is 160 cm thick and mostly consists of very fine sandy loam. A surface soil (Soil 1) with a strongly expressed Ap-E-Bt-C profile is developed in the top stratum (see Figure 139; Table 22). Dark grayish brown (10YR 4/2, dry) very fine sandy loam comprising the Ap horizon overlies a 17-cm-thick E horizon consisting of pale brown (10YR 6/3, dry) very fine sandy loam. The Bt1 and Bt2 horizons have a combined thickness of 30 cm and are dark yellowish brown (10YR 4/4, dry) loam and yellowish brown (10YR 5/4, dry) very fine sandy loam, respectively. There is strong to moderate prismatic structure in the Bt horizons, and brown (10YR 4/3, dry) clay films occur on the ped faces. Loose, light yellowish brown (10YR 6/4) very fine and fine sand comprises the lower 95 cm of the top stratum (C horizon) and mantles a soil (Soil 2) developed in the lower stratum in the core.

Soil 2 has a weakly expressed Ak-C profile. The Akb horizon is 20 cm thick and consists of light olive brown (2.5Y 5/3, dry) very fine sandy loam with stage I carbonate morphology that quickly grades downward to stratified, pale brown (10YR 6/3) fine and medium sand (Cb horizon).

SOM from the upper 10 cm of Soil 2 yielded a radiocarbon age of 5345 ± 25 RCYBP. Hence, Soil 2 represents a buried floodplain surface that was relatively stable about 5,350 years ago. However, the Ak-C profile of Soil 2 probably represents no more than about 100 years of stability. Given the radiocarbon ages determined on SOM from the buried soils in the T-2 and T-1 fills, the top stratum in Core 3 aggraded sometime between ca. 5350 and 4500 RCYBP.

Table 22. Description of Core 3, Johnson Locality, Red Lake River Valley, Red Lake County.

Landform: T-2
Slope: 1 percent
Drainage class: Well-drained
Land cover: Alfalfa
Soil organic matter from the upper 10 cm of Soil 2 yielded a radiocarbon age of 5345 ± 25 RCYBP.

Depth (cm)	Soil Horizon	Description
		Soil 1
0-18	Ap	Dark grayish brown (10YR 4/2) very fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, very friable; many fine and very fine roots; many worm casts and open worm and insect burrows; abrupt boundary.
18-35	E	Pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; weak fine granular structure; slightly hard, very friable; many fine and very fine roots; many worm casts and open worm and insect burrows; clear boundary.
35-55	Bt1	Dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; strong medium prismatic structure parting to strong fine prismatic; hard, firm; many distinct continuous brown (10YR 4/3) clay films on ped faces; common fine and very fine roots; common worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
55-65	Bt2	Yellowish brown (10YR 5/4) very fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine prismatic; hard, firm; few distinct discontinuous brown (10YR 4/3) clay films on ped faces; common fine and very fine roots; common worm casts and open worm and insect burrows; common fine and very fine pores; clear boundary.
65-160	C	Light yellowish brown (10YR 6/4) very fine and fine sand, yellowish brown (10YR 5/4) moist; single grain, loose; abrupt boundary.
		Soil 2
160-180	Akb	Light olive brown (2.5Y 5/3) very fine sandy loam, olive brown (2.5Y 4/3) moist; weak fine subangular blocky structure parting to moderate medium granular; hard, friable; common films and threads of calcium carbonate (5%); few fine and very fine roots; few worm casts and open worm and insect burrows; many fine and very fine pores; clear boundary.
180-250	Cb	Stratified pale brown (10YR 6/3) fine and medium sand, light olive brown (2.5Y 5/3) moist; single grain, loose.

Based on the soil stratigraphy and radiocarbon chronology, there is high potential for stratified Archaic cultural deposits in the T-2 fill at the Johnson Locality. Middle Archaic cultural deposits are most likely to be associated with Soil 2, and both Middle and Late Archaic archeological materials may occur in the top stratum. The presence of a strongly developed surface soil with an A-E-Bt horizon suggests that the T-2 surface has been stable for at least 3,000 years, so Late Archaic and younger cultural deposits may occur on T-2.

Core 4

Core 4 was taken on the T-3 terrace and reached a depth of 3.6 m before ending in a gravel bar, which was intercepted at a depth of 3.3 m. Two strata comprise the T-3 fill above the gravel bar: a 79-cm-thick top stratum consisting of very fine sandy loam fining upward to silt loam, overlying a 251-cm-thick stratum consisting of sand fining upward to loam. A surface soil (Soil 1) with a strongly expressed Ap-Bt-BC profile is developed in the top stratum (see Figure 139; Table 23). The Ap horizon is directly above the Bt1 horizon; there is no evidence of an intact A or E horizon. The absence of an A and E horizon is attributed to soil erosion resulting from agricultural land use. The argillic horizon (Bt1 + Bt2) is

41 cm thick and consists of brown (10YR 5/3, dry) loam. There is moderate to weak prismatic structure in the Bt horizons and dark grayish brown (10YR 4/2, dry) clay films occur on the ped faces. Pale brown (10YR 6/3, dry) very fine sandy loam comprises the lower 18 cm of the top stratum (BC horizon) and mantles a soil (Soil 2) developed in the underlying stratum.

Table 23. Description of Core 4, Johnson Locality, Red Lake River Valley, Red Lake County.

Landform: T-3
Slope: 1 percent
Drainage class: Well-drained
Land cover: Alfalfa
Soil organic matter from the upper 10 cm of Soil 2 yielded a radiocarbon age of 3260 ± 20 RCYBP.

Depth (cm)	Soil Horizon	Description
		Soil 1
0-20	Ap	Dark grayish brown (10YR 4/2) silt loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable; many fine and very fine roots; many worm casts and open worm and insect burrows; abrupt boundary.
20-43	Bt1	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; common fine faint yellowish brown (10YR 5/4) mottles; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable; many distinct discontinuous dark grayish brown (10YR 4/2) clay films on ped faces; many fine and very fine roots; many worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
43-61	Bt2	Brown (10YR 5/3) loam, brown (10YR 4/3) moist; common fine faint yellowish brown (10YR 5/4) mottles; weak medium prismatic structure parting to weak fine subangular blocky; hard, friable; few distinct discontinuous dark grayish brown (10YR 4/2) clay films on ped faces; common fine and very fine and few medium roots; common worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
61-79	BC	Pale brown (10YR 6/3) very fine sandy loam, brown (10YR 5/3) moist; very weak fine subangular blocky structure; hard, friable; few fine and very fine roots; few worm casts and open worm and insect burrows; common very fine pores; abrupt boundary.
		Soil 2
79-96	Akb	Brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; hard, friable; common films, threads, and fine flecks of calcium carbonate (5%); common fine and very fine roots; common worm casts and open worm and insect burrows; many fine and very fine pores; gradual boundary.
96-120	Bk1b	Light yellowish brown (2.5Y 6/3) loam, light olive brown (2.5Y 5/3) moist; weak medium prismatic structure parting to weak fine prismatic; hard, firm; many films, threads, and fine flecks of calcium carbonate (20%); common fine and very fine roots; common worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
120-210	Bk2b	Light yellowish brown (2.5Y 6/3) loam, light olive brown (2.5Y 5/3) moist; weak medium prismatic structure parting to weak fine prismatic; hard, firm; many films and common threads of calcium carbonate (70%); few fine and very fine roots; few worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.

Table 23 (continued).

210-250	BCkb	Light yellowish brown (2.5Y 6/3) fine sandy loam, light olive brown (2.5Y 5/3) moist; very weak medium prismatic structure parting to very weak fine prismatic; hard, firm; faint bedding; many films and common threads of calcium carbonate (30-35%); few fine and very fine roots; few worm casts and open worm and insect burrows; common fine and very fine pores; clear boundary.
250-300	C1b	Stratified very pale brown (10YR 7/3) very fine and fine sand, pale brown (10YR 6/3) moist; interbedded with fine gravel; single grain, loose; gradual boundary.
300-330	C2b	Stratified very pale brown (10YR 7/3) medium, coarse, and very coarse sand, pale brown (10YR 6/3) moist; interbedded with fine gravel; single grain, loose; abrupt boundary.
330-360	2C3b	Gravel interbedded with light gray (10YR 7/2) medium, coarse, and very coarse sand; single grain, loose.

Soil 2 has a thick, well-expressed Ak-Bk-BCk profile formed in an upward-fining sequence. The Akb horizon is 17 cm thick and consists of brown (10YR 4/3, dry) loam. Weak carbonate morphology (stage I) occurs in the Akb horizon, but it rapidly increases with depth in the Bk horizons. The Bk1b and Bk2b horizons have a combined thickness of 114 cm and consist of light yellowish brown (2.5Y 6/3, dry) loam. Carbonate morphology increases from stage II in the Bk1b horizon to stage II+ in the Bk2b horizon, with 70 percent of the matrix whitened in the Bk2b horizon. Light yellowish brown (2.5Y 6/3, dry) fine sandy loam comprising the BCkb horizon, which has stage II carbonate morphology, grades downward to stratified very pale brown (10YR 7/3, dry) very fine and fine sand in the C1b horizon. The grain size of the sand increases with depth, with medium, coarse, and very coarse sand comprising the C2b horizon, and gravel interbedded with sand occurs in the lower 30 cm of the core (2C3b horizon).

SOM from the upper 10 cm of Soil 2 yielded a radiocarbon age of 3260 ± 20 RCYBP. This age is younger than the ages determined on buried soils in the T-1 and T-2 fills and, therefore, is problematic. Because the soil sample collected for radiocarbon dating from Core 4 was at a shallow depth (79-89 cmbs), it probably was contaminated with modern SOM. This explains the relatively young age determined on SOM from a buried soil that should be older than ca. 5350 RCYBP.

Based on the soil stratigraphy, there is high potential for buried cultural deposits in the T-3 fill. Archeological materials are most likely to be on and within Soil 2, but because the numerical age of the T-3 fill is unknown, the cultural periods that might be represented by those materials cannot be predicted with certainty. Given the radiocarbon age determined on SOM from the buried soil in the adjacent T-2 fill, Soil 2 in the T-3 fill should be older than ca. 5350 RCYBP. Hence, it is reasonable to assume that stratified Late Paleoindian and/or Early Archaic cultural deposits may occur in the T-3 fill.

Core 5

Core 5 was taken on the T-4 terrace and was refused at a depth of 2 m. A surface soil with a well-expressed Ap-Bt-Bk profile is developed in the T-4 fill (see Figure 139; Table 24); buried soils were not detected in the core. The argillic horizon (Bt1 + Bt2) is 57 cm thick and consists of dark yellowish brown (10YR 4/4, dry) loam. The Bk1 and Bk2 horizons have a combined thickness of 45 cm and consist of light yellowish brown (2.5Y 6/3, dry) loam and pale yellow (2.5Y 7/3, dry) very fine sandy loam, respectively. Carbonate morphology increases from stage II in the Bk1 horizon to stage II+ in the Bk2 horizon, with 65-70 percent of the matrix whitened in the Bk2 horizon. Light yellowish brown (2.5Y 6/3, dry) fine sandy loam comprising the BCk horizon grades downward to stratified light yellowish brown (2.5Y 6/4, dry) fine, medium and coarse sand interbedded with fine gravel (C1 horizon). The lower 15 cm of the core (C2 horizon) consists of laminated pale yellow (2.5Y 7/3, dry) and light yellowish brown (2.5Y 6/3, dry) silt loam, loam and very fine sandy loam.

Table 24. Description of Core 5, Johnson Locality, Red Lake River Valley, Red Lake County.

Landform: T-3
Slope: 1 percent
Drainage class: Well-drained
Land cover: Alfalfa

Depth (cm)	Soil Horizon	Description
0-20	Ap	Dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; slightly hard, friable; many fine and very fine roots; many worm casts and open worm and insect burrows; abrupt boundary.
20-50	Bt1	Dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; common fine faint yellowish brown (10YR 5/4) mottles; moderate medium prismatic structure parting to moderate fine subangular blocky; hard, friable; many distinct discontinuous dark grayish brown (10YR 4/2) clay films on ped faces; many fine and very fine roots; many worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
50-77	Bt2	Dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; common fine faint yellowish brown (10YR 5/4) mottles; weak medium prismatic structure parting to weak fine subangular blocky; hard, friable; few distinct discontinuous dark grayish brown (10YR 4/2) clay films on ped faces; common fine and very fine and few medium roots; common worm casts and open worm and insect burrows; common fine and very fine pores; gradual boundary.
77-102	Bk1	Light yellowish brown (2.5Y 6/3) loam, olive brown (2.5Y 4/3) moist; moderate medium prismatic structure parting to moderate fine prismatic; hard, firm; many films and threads of calcium carbonate (20-25%); few very fine roots; few worm casts and open worm and insect burrows; many very fine and common fine pores; gradual boundary.
102-122	Bk2	Pale yellow (2.5Y 7/3) very fine sandy loam, light yellowish brown (2.5Y 6/3) moist; very hard, friable; moderate medium prismatic structure parting to moderate fine prismatic; hard, friable; many films and threads of calcium carbonate (65-70%); few very fine roots; few worm casts and open worm and insect burrows; common very fine and fine pores; gradual boundary.
122-150	BCk	Light yellowish brown (2.5Y 6/3) fine sandy loam, olive brown (2.5Y 4/3) moist; very weak medium prismatic structure parting to very weak fine subangular blocky; hard, friable; many films and threads of calcium carbonate (10%); few very fine roots; few worm casts and open worm and insect burrows; many very fine and common fine pores; clear boundary.
150-185	C1	Stratified light yellowish brown (2.5Y 6/4) fine, medium and coarse sand interbedded with fine gravel, light yellowish brown (2.5Y 6/4) moist; single grain, loose; abrupt boundary.
185-200	C2	Laminated pale yellow (2.5Y 7/3) and light yellowish brown (2.5Y 6/3) silt loam, loam and very fine sandy loam, light yellowish brown (2.5Y 6/3) and light olive brown (2.5Y 5/3) moist; single grain, loose.

The numerical age of the T-4 fill is unknown. It should be older than 5345 ± 25 RCYBP (the radiocarbon age determined on SOM from Soil 2 in the T-2 fill) but younger than about 9300 RCYBP (the time when the region was no longer inundated by Glacial Lake Agassiz).

There is moderate potential for buried Late Paleoindian and/or Early Archaic cultural deposits in the upper 2 m of the T-4 fill. Although buried soils do not occur in that portion of the fill, people may have occupied the early-Holocene floodplain (now the T-4 terrace) during its final phase of aggradation. Also, Late Paleoindian, Archaic, and Woodland-period cultural deposits may occur on the T-4 surface.

A single tertiary reduction flake was discovered while screening soil matrix from Core 5 that derived from a depth of between 20 and 50 cmbs. In addition, numerous quantities of prehistoric cultural material were reported from the surface of this area after it was first plowed in the 1970s. The flake, designated site 21RL30, and the reported material, designated site 21RLa, are addressed in greater detail on pages 99-103, above.

Cyr Locality

The Cyr Locality is on the Campbell Beach Ridge near the confluence of Cyr Creek and the Red Lake River (see Figures 22, 23, 27, and 128). The modern soil and some underlying beach sediments are exposed in the walls of a shallow gravel pit that was excavated at the top of the beach ridge (Figure 140). A portion of one wall, referred to here as the Cyr Section (Figure 141), was cleaned off with a shovel and described.

Figure 140. Photograph of the east wall of the sand and gravel pit at the Cyr Locality. The shovel is leaning against the Cyr Section.

At the Cyr Locality, a surface soil with a moderately expressed A-Bw profile is developed in the upper 60 cm of the section (Table 25). The A horizon is 46 cm thick and consists of very dark gray (10YR 3/1, dry) loamy fine sand. A few fine pebbles (2 percent) occur throughout the matrix of the A horizon. The Bw horizon is 14 cm thick and consists of brown (10YR 4/3) loamy fine sand with 5 percent gravel. An abrupt boundary separates the Bw horizon from a unit of sandy gravel (2C horizon) at a depth of 60-110 cmbs. A slightly cross-bedded sand unit (3C horizon) underlies the gravel.

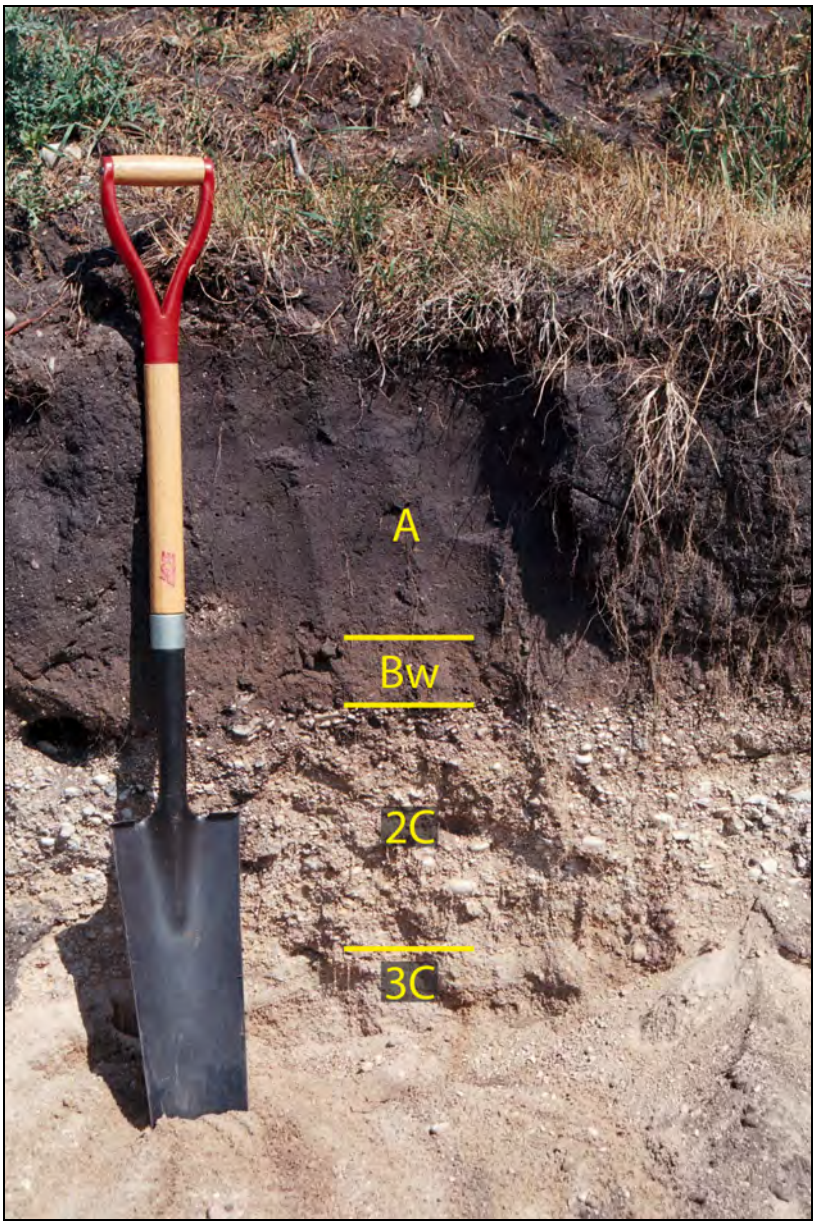


Figure 141. Close-up of the Cyr Section showing soil horizonation. The view is to the east.

The lower two units exposed in the Cyr section clearly are beach deposits. However, the unit of loamy fine sand that mantles the gravel is either a regressive deposit of Glacial Lake Agassiz, an æolian deposit, or a regressive deposit that has been reworked by æolian processes. Krotovina filled with sandy gravel derived from the 2C horizon occur in the top stratum. Hence, the fine pebbles that are scatted through the mantle of loamy fine sand may have been moved up the profile by bioturbation and/or by other soil-mixing processes.

Although buried soils do not occur in the Cyr Section, and an inspection of the walls of the gravel pit did not result in the discovery of any archeological materials, excavations at the Donarski site (21MA33) in Marshall County, Minnesota demonstrated that intact cultural features sometimes occur in significant numbers below the plowzone on the Glacial Lake Agassiz beach ridges (see Kluth and Hudak 2004). At Donarski, there is evidence for short-term hunting and lithic procurement camps that were intermittently occupied over a period of approximately 10,000 years and a portion of that record is in a stratified context. Hence, the Campbell Beach Ridge in Red Lake County has potential for yielding buried cultural deposits, especially ones dating to the Late Paleoindian and Early Archaic periods.

Table 25. Description of Cyr Section, Campbell Beach Ridge, Red Lake County.

Landform: Campbell Beach Ridge
Slope: 1 percent
Drainage class: Well-drained
Land cover: Grass

Depth (cm)	Soil Horizon	Description
0-46	A	Very dark gray (10YR 3/1) loamy fine sand, black (10YR 2/1) moist; weak fine subangular blocky structure parting to weak fine granular; very friable; few fine pebbles (2%) scattered through the matrix; many fine and very fine roots; many worm casts and open worm and insect burrows; few krotovina filled with light brownish gray (10YR 6/2, dry) sandy gravel; many fine and very fine and few medium roots; abrupt smooth boundary.
46-60	Bw	Brown (10YR 4/3) loamy fine sand, dark brown (10YR 3/3) moist; weak fine subangular blocky structure; very friable; 5% gravel; many fine and very fine roots; many worm casts and open worm and insect burrows; many fine and very fine roots; abrupt smooth boundary.
60-110	2C	Light gray (10YR 7/2, dry) sandy gravel, light brownish gray (10YR 6/2) moist; single grain; loose; 80% gravel; abrupt smooth boundary.
110-150+	3C	Light gray (10YR 7/2, dry) cross-bedded sand, light brownish gray (10YR 6/2) moist; common fine and medium distinct yellowish brown (10YR 5/6) and olive yellow (2.5Y6/6) mottles; single grain; loose; 2% gravel.

SUMMARY AND CONCLUSIONS

The primary goal of this investigation was to determine the soil stratigraphy and chronology of Holocene alluvial fills in the Red Lake River valley in the study area. The results help provide the basis for assessing the geologic potential for buried prehistoric cultural deposits in the valley.

The time at which the Red Lake River developed is unknown because the age of the oldest alluvial deposits stored in the valley remains unknown. We know that aggradation was occurring prior to ca. 5350 RCYBP, so the incision of the Red Lake River occurred before that time. However, we do not know if incision occurred before or after the Emerson Phase of Glacial Lake Agassiz (i.e., post-9300 RCYBP).

More questions were raised than answered about the sequence of high terraces (T-2, T-3, and T-4) examined at the Johnson Locality. For example, are all of the terraces underlain by separate fills, or is T-3 a strath cut across the T-4 fill? Aggradation of the T-2 fill appears to have occurred during the middle Holocene and was interrupted by at least one episode of landscape stability and concomitant soil development around 5350 RCYBP. However, the age of the T-3 and T-4 fill could not be accurately determined with radiocarbon-dating methods. Although a shallow buried soil was recorded in the T-3 fill, SOM from the upper 10 cm of that soil was contaminated with modern soil carbon and consequently yielded an erroneously young radiocarbon age. Also, coring proved to be difficult in the sandy T-4 fill, and the 2-m-long core that was recovered lacked buried soils and ^{14}C-dateable materials. Future investigations should employ a large drill rig to deeply penetrate the alluvial fills beneath the high terraces. The sandy alluvium comprising those fills is very suitable for optically stimulated luminescence (OSL) dating, an effective, albeit expensive, method that could be used to develop a robust alluvial chronology for the Red Lake River.

The stratigraphy of the valley fill beneath the T-1 surface is somewhat complex. At the Capistran Locality, three buried soils occur in the upper 4.25 m of the T-1 fill. Charcoal from the middle buried soil (Soil 3) yielded a radiocarbon age of 4405 ± 20 RCYBP. Hence, Soil 3 represents a period of floodplain stability during the transition from the middle to late Holocene. The T-1 fill at Capistran rests unconformably on late-Wisconsinan glacial till comprising the Huot Formation. At the Johnson Locality, only one buried soil occurs in the fine-grained alluvium that overlies coarse

gravel, but SOM from that soil yielded a radiocarbon age of 4485 ± 20 RCYBP, which is similar to the age determined on Charcoal from Soil 3 at the Capistran Locality.

At quick glance, the soil stratigraphy of the T-1 fill at the Brule Locality resembles the soil stratigraphy at the Capistran Locality. At Brule, three buried soils occur in the upper 4.5 m of the T-1 fill, which is the same number of buried soils recorded in the T-1 fill at Capistran. However, charcoal recovered from the upper 10 cm of the Akb3 horizon of Soil 4 at Brule yielded a radiocarbon age of 2430 ± 70 RCYBP, and late-Wisconsinan glacial till (Huot Formation) is immediately below Soil 4. So while most, if not all, of the T-1 fill at Brule is less than 3,000 years old, the T-1 fill in the Capistran Section dates back to at least 4400 RCYBP and probably began to aggrade around 5000 RCYBP. Also, the T-1 fill at Brule is sandier and browner than the T-1 fill at Capistran. Based on these findings, laterally inset alluvial fills may occur beneath the T-1 surface. On the other hand, while middle and early late-Holocene alluvium is preserved at Capistran, it may have been completely removed by stream erosion and replaced with late-Holocene alluvium at Brule.

The T-0 fill of the Red Lake River was examined at one place in the project area, the Johnson Locality. Core 1 at the Johnson Locality reached a depth of only 2 m before it was refused, perhaps in gravel. The upper 40 cm of the T-0 fill consists of Historic-age alluvium, and SOM from Soil 2, which underlies the mantle of modern alluvium, yielded a radiocarbon age of 975 ± 20 RCYBP. Hence, Soil 2 represents a buried floodplain surface that was relatively stable about 1,000 years ago.

Based on the results of this investigation, the paucity of previously recorded prehistoric sites in the Red Lake River valley probably is, at least in part, a result of deep burial and erosion. Most of the record of Woodland-period occupation probably is in a buried context in the T-0 fill, and there is high potential for stratified Middle Archaic, Late Archaic, and Initial Woodland cultural deposits in the T-1 fill. Middle Archaic cultural deposits also are likely to occur beneath the T-2 terrace, and Early Archaic and Late Paleoindian archeological materials may be deeply buried in the T-3 and T-4 fills. However, only narrow remnants of the high terraces (T-2, T-3, and T-4) occur in the project area. The Red Lake River went through a major episode of incision soon after ca. 5350 RCYBP, leaving the T-2 terrace elevated 5 m above the T-1 surface. Most of the valley fill beneath the T-2, T-3, and T-4 terraces was eroded during the late-Holocene channel migrations. Hence, it is likely that much of the Late Paleoindian and Early and Middle Archaic record was removed from the valley.

It is important to note that the Campbell Beach Ridge in Red Lake County also has potential for yielding buried cultural deposits, especially ones dating to the Late Paleoindian and Early Archaic periods. A geoarcheological investigation in nearby Marshall County, Minnesota (Kluth and Hudak 2004) demonstrated that intact cultural features sometimes occur in significant numbers below the plowzone on the Glacial Lake Agassiz beach ridges.

Finally, it is also noteworthy that peat deposits occur on a few uplands areas in the eastern part of the county. The peat deposits generally began to form about 2,000 years ago and may mantle cultural deposits. The places where peat occurs were wet, open grasslands prior to the development of peatlands and would likely have been an ideal habitat for migrating bison (see Neumann and Johnson 1979:92). Therefore, bison hunters also would have been attracted to these environmental settings.

Several conclusions important to the interpretation of the study area's archeological record arise from the information presented in this chapter. First, late-Quaternary landscapes are mosaics of landforms and underlying sediments. The temporal and spatial patterns of these landform sediment assemblages have undoubtedly influenced many spatial and temporal patterns observed in the archeological record. Second, the success of strategies for archeological sampling of the Red Lake River valley and other landscapes, such as the Glacial Lake Agassiz beach ridges, depends in large part on the level of understanding of soil stratigraphy, geochronology, and geomorphic patterns. Finally, the geologic filter *strongly* controls the archeological record. Temporal and spatial patterns of erosion and sedimentation, which may have produced differential preservation and visibility of past human activity, must be assessed in order to distinguish the effects of geomorphic processes from those of human choices in the archeological record. Without this assessment, an accurate understanding of prehistoric peoples' use of the landscape is impossible.

SYNTHESIS AND RECOMMENDATIONS

RESEARCH OBJECTIVES AND INVESTIGATION RESULTS

The objective of the current study, as defined on page 3 of the project RFP, was "…to summarize what is known about the prehistoric past of Red Lake County, to update the State Archaeologist's site file with regard to the status of known sites, to find unrecorded sites, and to build a narrative predictive model of where prehistoric sites should be located" (see Appendix A). Three primary tasks comprised the project:

1) Assess what is known about the prehistoric human occupation of Red Lake County by reviewing site records and reports, examining institutional artifact collections, interviewing local artifact collectors, and reconstructing the paleoenvironment.

2) Conduct a field survey of previously recorded and reported (alpha) site areas in the county, as well as select localities identified in the research design that are felt to reflect a good sample of varying landform settings with high, medium, and low potential for harboring prehistoric archeological deposits.

3) Complete an analytical and descriptive report, a narrative site locational probability model for identifying prehistoric resources, and a short overview of the human prehistory of the county suitable for public distribution.

In addressing Task 1, site records and reports were reviewed at the OSA and SHPO, and records from the U-of-M and IMA were also consulted. Additionally, resources at ALAC and the CWS, Augustana College, Sioux Falls, the NRCS offices in Red Lake Falls and Thief River Falls, and the Red Lake County Historical Society, were also consulted. Three private artifact collections from the county were examined and limited interviews were conducted with the owners of the collections, as well as with other local residents knowledgeable about the history and prehistory of the county. Six of the newly identified archeological sites were recorded as a direct result of these consultations.

With regard to Task 2, complementary archeological and geomorphological field investigations were conducted throughout Red Lake County during several sessions between mid-June and mid-October, 2012. The archeological pedestrian survey examined 4,454 acres of land in 27 survey parcels within the study area. Twenty-four previously unrecorded archeological properties were identified and nine previously recorded/reported sites were revisited during the course of the study. No archeological evidence was relocated at one previously recorded site area and three of the alpha site areas that were investigated during the present study. The geomorphic component involved the mapping of surfaces and landforms and the describing and sampling of sections of alluvial fills in stream valley and relict beach ridges at four different areas within and just beyond the county border. The geomorphic investigation, which examined stream cutbanks, exposed beach ridge deposits, and terrace fill from deep soil cores, resulted in the identification of paleosols from four different terrace surfaces in three separate localities and the acquisition of ten radiocarbon dates from various buried strata in these areas.

The following discussion summarizes the results of the investigation and provides a narrative site locational predictive model and recommendations for future research in the county. The final component of Task 3, an overview of the county's human prehistory, is appended to the report (see Appendix D).

Survey Parcels and Sampling Probability

The current pedestrian survey was conducted within 27 separate land parcels totaling 4,454 acres. Although this investigation is the largest systematic archeological survey conducted in Red Lake County to date, it is noteworthy that the acreage represents less than 1.7 percent of the county's 277,000-acre total land surface. Eight of the 27 total parcels examined, about 847 acres (19 percent), are in Archaeological Subregion 7w; nineteen parcels, about 3,607 acres (81 percent), are in Subregion 6n.

Elizabeth Hobbs, MNDOT, evaluated the distribution of surveyed parcels relative to areas in the county identified by MN/Model as having high, medium, and low potential for harboring archeological sites (Figure 142). Based largely on a lack of previous survey data, MN/Model classifies 37.9 percent of Red Lake County as *unknown* in terms of its archeological site potential. However, calculations for the evaluation include *unknown* areas under the *low* potential umbrella because only a very small amount of surveyed land was actually in unknown zones.

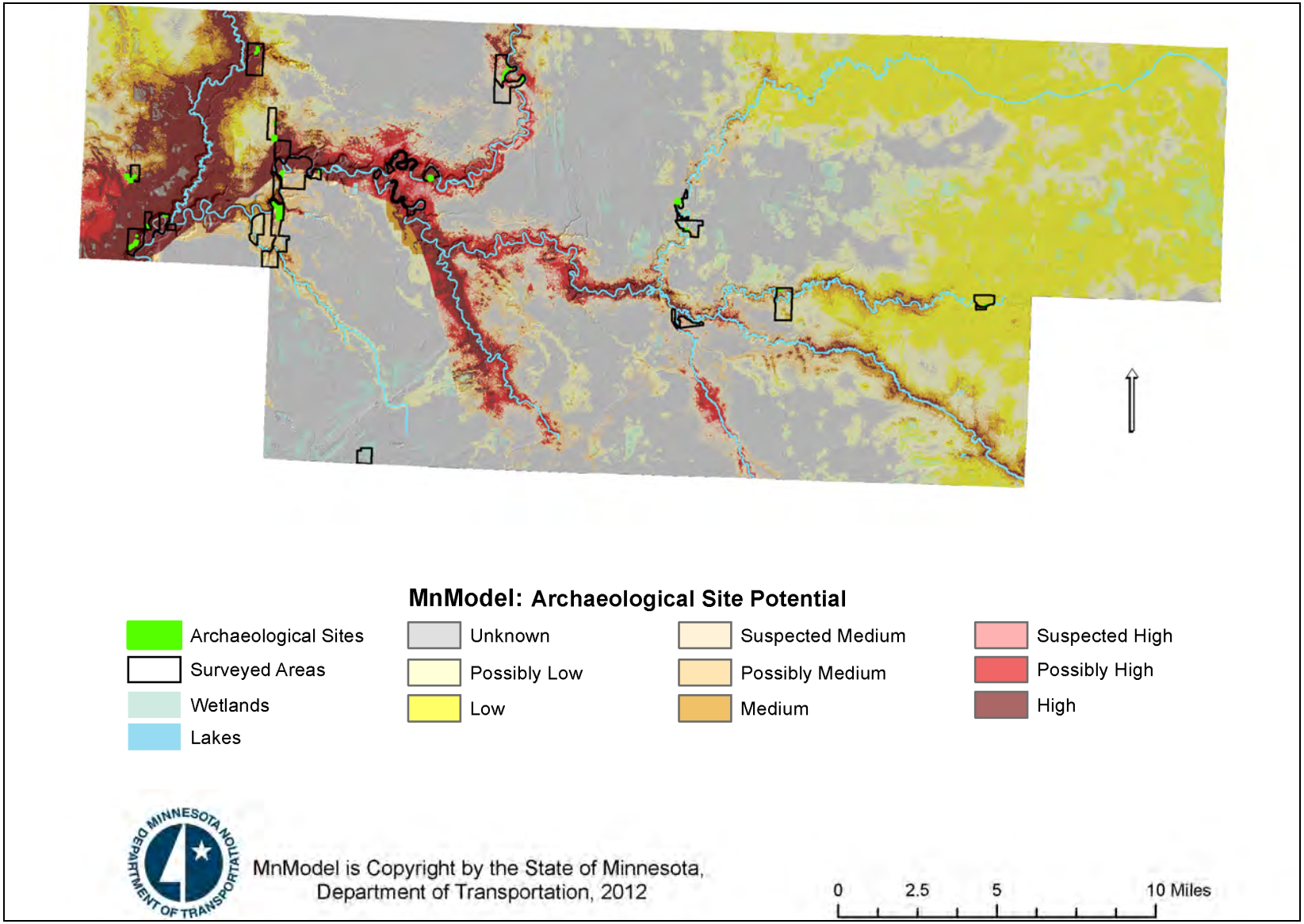


Figure 142. MN/Model for archeological site potential in Red Lake County depicting sites and survey areas from the current study (courtesy of Elizabeth Hobbs, MNDOT).

Results of the evaluation indicate that 75.1 percent of the classified area in the county has low archeological site potential. Of the 4,454 acres surveyed during the current investigation, 21.5 percent, or about 958 acres, were in low probability areas. MN/Model designates 12.3 percent of the classified area in the county as having medium site potential and 33.2 percent of the area investigated, about 1,478 acres, was in medium potential zones. Only 12.6 percent of the county's classified area is designated by MN/Model as high potential, whereas 45.3 percent of ALAC's surveyed acreage, approximately 2,018 acres, was in high potential zones.

Clearly the selection of survey parcels was not foremost a probabilistic venture. Rather, as stated on page 4 of the RFP, it was primarily directed towards the maximization of site discovery (see Appendix A). Other factors, such as landowner access permission and crop growth in certain fields, also restricted the ability to conduct a truly probabilistic survey. Ultimately, of the 27 total parcels investigated, 14, or about 52 percent, were found to contain at least one prehistoric archeological site. Several of these parcels contained more than one site.

Site Distribution and Composition

There are currently 30 known and 18 reported (alpha) archeological sites in Red Lake County (Table 26). Twenty-four of these properties, including two alpha sites and 22 numbered sites, were documented as a result of the present study. Nine previously recorded/reported site areas, or portions thereof, were also revisited during the study. Only eight of the 48 total properties (about 17 percent) are in Subregion 7w; however, this is not necessarily unexpected given that only 19 percent of the current survey area, consisting of eight total parcels, was in this subregion.

Table 26. Red Lake County Archeological Numbered Sites and Alpha Sites.

Site Number	Cultural Affiliation (Context)	Site Type	Archaeological Subregion	Notes/ Comments
21RL1	Woodland (Late Woodland; poss. Laurel & Transitional)	Earthwork/ Burial Mound	6n	No evidence of mounds
21RL2	Woodland (poss. Late Woodland)	Earthwork/ Burial Mound	6n	Did not revisit
21RL3	Woodland (poss. Blackduck)	Artifact Scatter	6n	Did not revisit
21RL4	Post-contact	Cemetery/ Mortuary	6n	Destroyed – burials salvaged
21RL5	Precontact and Post-contact	Lithic Scatter and Artifact Scatter	7w	Did not revisit
21RL6	Precontact	Single Artifact	7w	Just north of 21RL9
21RL7	Precontact	Single Artifact	6n	Did not revisit
21RL8	Precontact	Lithic Scatter	7w	Did not revisit
21RL9	Woodland	Artifact Scatter/ Habitation	7w	Just south of 21RL6
21RL10	Woodland	Artifact Scatter	6n	Northwest of 21RL1
21RL11	Prehistoric	Artifact Scatter	6n	In 21RLi boundary
21RL12	Prehistoric	Artifact Scatter	6n	In 21RLi boundary
21RL13	Prehistoric	Lithic Scatter	6n	Just north of 21RLi
21RL14	Prehistoric	Lithic Scatter	6n	
21RL15	Prehistoric	Lithic Scatter	6n	
21RL16	Prehistoric	Lithic Scatter	6n	
21RL17	Prehistoric	Artifact Scatter	6n	
21RL18	Prehistoric	Lithic Scatter	6n	
21RL19	Prehistoric	Lithic Scatter	6n	

Table 26 (continued).

Site Number	Cultural Affiliation (Context)	Site Type	Archaeological Subregion	Notes/ Comments
21RL20	Prehistoric	Lithic Scatter	6n	
21RL21	Prehistoric	Lithic Scatter	7w	
21RL22	Woodland & Post-contact	Artifact Scatter	6n	
21RL23	Prehistoric	Lithic Scatter	6n	
21RL24	Prehistoric	Lithic Scatter	7w	
21RL25	Prehistoric	Single Artifact	7w	
21RL26	Prehistoric	Lithic Scatter	6n	
21RL27	Prehistoric	Single Artifact	6n	
21RL28	Woodland	Artifact Scatter	6n	Identified by local collector
21RL29	Prehistoric (poss. late Woodland)	Artifact Scatter	6n	Identified by local collector
21RL30	Prehistoric	Single Artifact	6n	In 21Rla boundary
21RLa	Precontact and Post-contact	Artifact Scatter, Feature, Earthwork	6n	Five deep soil cores obtained here
21RLb	Contact	Trading Post	6n	Did not revisit
21RLc	Precontact (poss. Woodland)	Earthwork/ Burial Mound	7w	No evidence of mound
21RLd	Post-contact	Ghost Town (Delorme)	6n	Railroad switching station
21RLe	Post-contact	Ghost Town (Hilltop)	6n	Railroad town
21RLf	Post-contact	Ghost Town	6n	Did not revisit
21RLg	Precontact (poss. Archaic)	Single Artifact (copper projectile point)	6n	Did not revisit
21RLh	Precontact (poss. Archaic)	Single Artifact (copper projectile point)	6n	Did not revisit
21RLi	Precontact	Artifact Scatter	6n	21RL11 & 21RL12 are within this area
21RLj	Precontact	Artifact Scatter	6n	Did not revisit
21RLk	Precontact	Artifact Scatter	6n	Did not revisit
21RLl	Unknown	Unknown	6n	Did not revisit
21RLm	Unknown	Artifact Scatter	6n	Did not revisit
21RLn	Contact & Post-contact	Cemetery (Cyr Cemetery)	6n	Did not revisit
21RLo	Woodland (Late Woodland; poss. Laurel & Transitional)	Earthwork/ Burial Mound	6n	Site is same as 21RL1
21RLp	Post-contact (Northern Minnesota Lumbering)	Ruins/Lumber Mill	6n	Al Buse has turbine and milling stones
21RLq	Prehistoric	Lithic Scatter	6n	Reported – site not surveyed
21RLr	Prehistoric	Lithic Scatter	6n	Surveyed – no artifacts discovered

Red Lake County's 48 documented and reported archeological resources are largely prehistoric in composition. One of the 30 numbered sites (21RL4) and six of the 18 alpha sites (21RLb, 21RLd, 21RLe, 21RLf, 21Rln, and 21RLp) do not have a prehistoric component. Three sites, 21RL5, 21RL22, and 21RLa, have a contact-/post-contact component in addition to a prehistoric component. This accounts for 10 sites, or about 21 percent of the total properties identified. The cultural affiliation of two of the reported sites, 21RLl and 21RLm, is unknown. These sites comprise just over 4 percent of the total number identified. The remaining properties, including sites 21RL5, 21RL22, and 21RLa, have prehistoric components. The number of sites in the county with a prehistoric component is 39, or slightly more than 81 percent of the total number identified. These percentages equal a number greater than one hundred because the multi-component sites were counted twice.

Generally speaking, the preliminary nature of this investigation precludes the assignment of specific cultural-historical and site functional affiliations. However, in some cases, diagnostic artifacts offer a degree of cultural and temporal clarification. Table 27 summarizes the documented resources by component and, when possible, by historic context. Figure 143 illustrates these data.

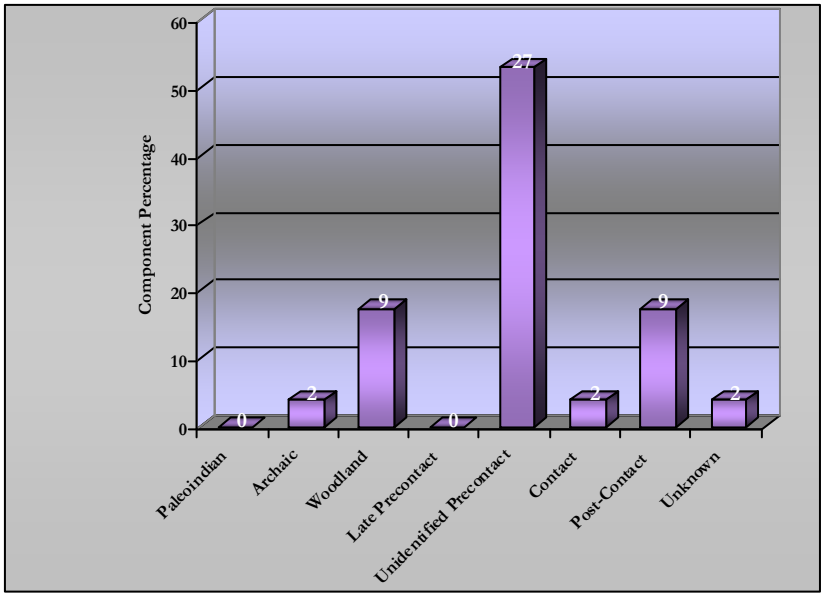


Figure 143. Cultural components identified in the study area by count (bars) and percentage of total (Y axis).

The contact- and post-contact properties consist of a late nineteenth century lumber mill and camp, a mid-twentieth century dump, a fur trade-era post, three ghost towns, two cemeteries, and an artifact scatter. Twenty-seven unaffiliated precontact site components were identified. As expected, this site-type dominated the assemblage, accounting for 53 percent of the total identified components and over 71 percent of the precontact components. The remaining 11 precontact components that can be attributed to either general or specific cultural/temporal affiliations are Archaic (n=2) and Woodland (n=9 [21RL1 and 21RLo are the same site]). No sites with clearly identifiable Paleoindian or Late Prehistoric components were identified; however, a letter in the 21RLa site file suggests that possible Late Paleoindian artifacts were collected from that area.

Table 27. Cultural Components Identified in Red Lake County by Archaeological Subregion.

Cultural Period/ Tradition	Specific Context Identified?	Red River Valley North Subregion	Northern Bog West Subregion	Total Count	Percent of Total
Paleoindian	—	0	0	0	0
Archaic	—	2	0	2	4.0
Woodland	Poss. Transitional, Laurel & Blackduck	7	2	9	17.5
Late Prehistoric	—	0	0	0	0
Unidentified Precontact	—	21	6	27	53.0
Contact Period	French & Initial U.S.	2	0	2	4.0
Post-contact Period	—	8	1	9	17.5
Unknown	—	2	0	2	4.0
Total Count	—	**42**	**9**	**51**	**100.0**

These data should be interpreted with a degree of caution because they derive from a combination of unverified site reports and field investigations that relied almost entirely on pedestrian surface survey methodology. Additionally, as was previously mentioned, the survey localities were not selected probabilistically and, perhaps most significantly, the dataset consists of only 30 field-verified localities (numbered sites). Because of these factors, it is difficult to draw firm, concrete statements about the detailed location and distribution of archeological resources in the county. Nevertheless, the data *do* serve as an adequate foundation on which to build, and some broad generalizations concerning the distribution of prehistoric sites across the landscape are posited below.

When the 22 newly documented sites (excluding historic-period sites and alpha sites) were evaluated through MN/Model, the following results were obtained: 2.5 percent of the 22 sites identified by ALAC are in areas classified as low potential by the model. Conversely, 46.5 percent of newly identified sites are in modeled medium probability localities and 51 percent are in modeled high probability areas (see Figure 142; MN/Model evaluation conducted by Elizabeth Hobbs, MNDOT).

A MN/Model evaluation that combined these 22 sites with the seven previously recorded properties containing prehistoric components was not conducted. However, such an evaluation can be reasonably estimated by comparing the locations of the seven previously recorded prehistoric sites to the modeled areas of high, medium, and low site probability illustrated in Figure 142. Such a comparison indicates that sites 21RL5 and 21RL6 appear to be in low probability areas, 21RL1, 21RL3, and 21RL7 appear to be in high probability areas, and 21RL2 and 21RL8 appear to be in medium probability areas. After including these seven sites with the 22 newly documented ones, the total percentage of properties modeled in low probability areas increases to approximately 9 percent, the percentage in medium probability areas decreases to approximately 42 percent, and the percentage in high probability areas decreases to approximately 49 percent.

Although these percentages seems to validate the model well, it should be remembered that the strategy for sampling survey parcels during the current investigation was biased towards the maximization of site discovery, and the selection of previous survey localities was based almost entirely on the location of roadway and utility corridor projects. It is also interesting to note the high percentage of sites identified in medium probability areas versus the percentage discovered in high probability areas.

NARRATIVE SITE PREDICTIVE MODEL

Archeological site predictive models, particularly short narratives such as this, are simply tools designed to offer some degree of insight into those prehistoric site-types most likely to be located in a given topographical setting. It should be understood that these models do not provide definitive answers in terms of where sites will and will not be located, nor are they 'magical' dowsing instruments; they should not be utilized as such. For the purposes of this model, Red Lake County can most conveniently be partitioned into three distinct topographical settings: *General Uplands*, *Beach Ridges*, and *Stream Valleys*. Each of these settings will be discussed below in relation to likely site-types and whether the associated cultural deposits are likely to be deeply buried or located at or near the surface.

Four primary functional site-types can reasonably be expected to occur in association with the prehistoric occupation of Red Lake County. Based on a given site's function, we may also expect to recognize certain trends associated with the selection of its location, the frequency with which it was occupied, the number of similar sites present on the landscape, and the way in which it manifests archeologically. A short description of each site-type is provided here.

- **Habitation Sites** include temporary, semi-permanent, and permanent living areas such as villages or base camps, single-use camps, and temporary seasonal or satellite camps. Base camps are large sites located in areas with both abundant and predictable resources such as the confluences of major waterways and their tributaries. These areas likely provided access to known herd migration corridors and/or high elevation observation localities. The different types of camps were occupied for different durations; larger base camps were occupied repeatedly for extended periods while smaller, satellite camps were only utilized seasonally or even less frequently. The smaller camps would be found in similar settings to those described for the base camps or in close proximity to a predictable potable water supply. These sites may be discovered in buried contexts in both the stream valley and beach ridge settings.

- **Unclassified Sites** are far more ephemeral in nature and are expected to exist in far greater numbers on the landscape compared to the other three site-types. Though such site areas are more abundant, they are not necessarily more predictable in that they could represent any number of different activities. These sites, which typically consist of isolated artifacts or ephemeral lithic scatters, may represent small, single-use camps, specialized function areas that may have been reused at various times throughout the year (e.g., fishing or foraging areas, overlooks/animal herd observation areas), a brief rest area where a tool was resharpened or discarded, or an unintended, chance occurrence (e.g., a lost tool). This site type is likely to occur with the greatest frequency in the region and is also most likely to occur in a wide variety of landscape positions.

- **Resource Procurement Sites** include lithic quarries or procurement localities, as well as kill/processing areas and other foraging sites where resource gathering activities occurred. Quarries/lithic procurement sites are utilized for the very specific function of obtaining workable lithics for tool manufacture. These sites provide a reliable resource and would likely be revisited fairly regularly, albeit for very brief periods. In Red Lake County, the only sources of knappable lithics are the beach ridge deposits of Glacial Lake Agassiz. Kill/processing areas are, for the most part, medium- to large-sized sites representative of a single hunting event. However, certain sites that include herding and trapping components like drive lines, arroyo traps, and jumps, may have been utilized multiple times. These sites can represent the taking, butchering, and/or caching of one or more animals and will typically be found in a variety of settings across the landscape. Some of these settings include the heads of steep-sided tributaries adjacent to major waterways, the base of cliffs or gullies, the edge of lakes, marshes or watering holes, shallow river crossings, and open upland environments. Such sites are almost always identified in buried contexts and, as such, very few are likely to be detected in the study area except through deep testing in geographic areas of high probability or by chance (e.g., an erosional event exposing a bonebed in a cutbank). Foraging sites are even more difficult to identify archeologically than kill/processing sites simply because the footprint of human activity is negligible insofar as it relates to the surviving archeological record. Although foraging was presumably a frequent practice prehistorically, and one that likely occurred in relatively close proximity to habitation sites, no foraging sites are likely to be positively identifiable in the archeological record.

- **Mortuary/Burial** sites serve a very specific function, both ceremonially and practically. Sites of this type have been reported and documented in Red Lake County and it is likely that other such properties remain unrecorded within the study area. Most of these sites are probably affiliated with the Woodland tradition and will be identified as earthen burial mounds or the remnants of such features. They are most likely to be located in areas of greater topographic relief. In Red Lake County, such areas can generally be found only in association with beach ridges or prominent bluffs overlooking major waterways or stream confluences. This is not always the case, however, as two burial mounds at site 21RL2 were discovered on a general upland landscape in the western part of the county.

General Uplands

General Upland settings are here defined as any upland landscape located greater than one-half mile from the bluffs of a perennially flowing waterway or otherwise potable water source, and which does not include relict glacial beach ridge deposits. It is predicted that the vast majority of sites in this setting will be of the *Unclassified* type; however, a variety of subsistence-related *Resource Procurement* sites may also be located here. It is unlikely that sites of the *Habitation* or *Mortuary/Burial* types will be located in this setting. Because of the distance from potable water sources, site potential in this setting is, overall, likely to be low. It is predicted that the vast majority of sites will be discovered on the surface; however, the presence of buried sites in upland contexts should not be discounted as previous testing in the Midwest and Plains *has* identified buried sites in such settings.

A number of studies have reported how earthworms bury artifacts and features beneath their castings (Atkinson 1957; Balek 2002; Darwin 1881; Johnson 1990, 1992; Johnson and Watson-Stegner 1990; Rolfsen 1980; Van Nest 2002; Wood and Johnson 1978). Rolfsen (1980) has demonstrated that earthworms are actually capable of burying items to a depth of 45 cm below ground surface in about five years. Hence, worm castings, combined with soil brought to the surface by ants, burrowing mammals and uprooted trees, form a biomantle that may quickly conceal artifacts and cultural features on "stable" upland surfaces (Johnson 1990, 1992; Van Nest 2002). In a similar vein, and perhaps more significant to the current study, is the presence of peatlands in the easternmost portions of the county.

Radiocarbon dates place the onset of peat formation near the study area at around 2,000 years ago (Glaser et al. 1981:577). As a result, these deposits have the potential to harbor buried sites that predate the peat formation. Most sites buried in upland settings in the study area are predicted to be in near-surface (less than one mbs) contexts; however, those sites buried beneath peatlands may be deeper than one mbs. Although the thickness of the peat in Red Lake County is identified by Soper (1919:209) as "shallow," he does not quantify the term. Because studies further east have indicated an average thickness of 3-4 m for peat deposits (see Wright and Glaser 1983:376), any deposits in Red Lake County should be significantly shallower.

One could expect to find sites of all temporal periods in this setting, although some of the earlier sites that are coeval with Lake Agassiz, such as Late Paleoindian and Early Archaic, will not be found in those portions of the county that were covered by the lake at the time. Sites of early Paleoindian age would presumably only be discovered in the more easterly portions of the study area due to the then-extensive presence of Glacial Lake Agassiz in much of the rest of the county.

Beach Ridges

Beach Ridge settings include all landforms along former shorelines of Glacial Lake Agassiz during its various stages. It is predicted that *Unclassified*, *Resource Procurement* (specifically relating to lithic toolstone acquisition), and *Mortuary/Burial* site-types may be located in this setting. Previous research has demonstrated that *Habitations* such as the Donarski site (21MA33) may also be present in these settings (see Kluth and Hudak 2004). In general, buried site potential in this setting will vary from low to medium and will be predicated, in part, on the degree of æolian deposition and subsequent deflation for a given landform. Potential for lithic procurement sites will increase in areas where ridges are bisected by waterways because such exposures afforded easier access to the lithic deposits.

Sites from Late Paleoindian times onward could be expected in this setting although it is likely that most of the *Mortuary/Burial* sites will be earthen mounds associated with the Woodland tradition. This setting has the potential to harbor buried cultural deposits of Late Paleoindian through Middle Archaic age either within or beneath a mantle of æolian deposits (see Kluth and Hudak 2004). Of course, *Mortuary/Burial* sites also have a high likelihood of containing buried components in these settings. Later-period sites will become increasingly more likely to be discovered at or near the surface here.

Stream Valleys

Stream Valley settings consist of all landforms located in close proximity to perennially flowing waterways. This includes those landforms within the valley margins, such as terraces, alluvial fans, and floodplains, as well as the bluffs and uplands less than one-half mile from the bluff edge. Each of the four above-listed site types may be expected in these settings. *Unclassified* sites and *Resource Procurement* sites could be located from the floodplain to the uplands beyond the bluffs depending on the type of resource being acquired. *Mortuary/Burial* sites are likely to be confined to prominent ridges and hilltops along the bluffs overlooking the valley. *Habitation* sites are most likely to be located on alluvial fans and terraces within the valley. In this setting, site locational potential will likely vary from medium to high depending on the type of waterway, the presence of stream confluences, and other factors. However, with the exception of some bluff and high terrace localities, the vast majority of prehistoric sites in this setting are likely to be buried.

Sites of all temporal periods can be expected in stream valleys, although the location of a given site will vary depending on its age. The current geomorphological investigation in the Red Lake River valley revealed the following:

> Most of the record of [Middle and Late] Woodland-period occupation probably is in a buried context in the T-0 fill, and there is high potential for stratified Middle Archaic, Late Archaic, and Initial Woodland cultural deposits in the T-1 fill. Middle Archaic cultural deposits also are likely to occur beneath the T-2 terrace and Early Archaic and Late Paleoindian archeological materials may be deeply buried in the T-3 and T-4 fills. However, only narrow remnants of the high terraces (T-2, T-3, and T-4) occur in the project area. The Red Lake River went through a major episode of incision soon after ca. 5350 RCYBP, leaving the T-2 terrace elevated 5 m above the T-1 surface. Most of the valley fill beneath the T-2, T-3, and T-4 terraces was eroded during the late-Holocene

channel migrations. Hence, it is likely that much of the Late Paleoindian and Early and Middle Archaic record was removed from the valley [Mandel, p. 161, this report].

In other river valley settings within the study area, a similar situation is anticipated in terms of the prehistoric archeological record. With the exception of sites located along or within one-half-mile of the bluffs, most of the cultural deposits in these valleys probably are buried in terrace and floodplain deposits. Only those sites of relatively recent age, such as protohistoric, terminal Woodland, and historic-period properties, are likely to occur at the surface in stream valleys; however, the protohistoric and Woodland-age sites also may occur in buried contexts beneath floodplain (T-0) surfaces.

RECOMMENDATIONS FOR FUTURE STUDY

Earlier in this report (see pages 27-28), three research questions were posed concerning the prehistoric archeological record of Red Lake County. These questions are discussed below based upon the findings of the present study.

1) **Is the perceived paucity of prehistoric sites in the study area the result of environmental factors restricting the extent and tempo of human occupation, or is it simply the result of the limited amount and scope of previous archeological work?** Red Lake County may not have been utilized prehistorically as intensively as some other areas of the state. However, the present study strongly suggests that the dearth of previously identified sites in the county results primarily from a combination of inadequate survey methodology in particular landscape settings and the general lack of survey work conducted to-date. With respect to sites of the greatest antiquity, paleoenvironmental factors were clearly at play as portions of the county were inundated by Glacial Lake Agassiz until around 9,000 years ago.

2) **Will the assemblage of prehistoric sites in the study area continue to be dominated by Woodland-period cultural components and why/why not?** The answer to this question remains somewhat elusive. Based solely on the data discussed above, the answer appears to be *yes* – the majority of identifiable prehistoric site components from the county are Woodland-period. However, the situation is not nearly as black-and-white as the numbers suggest. There are several complications. First, the sample of identified site components, while expanded during this study, remains extremely small. Second, of the 38 identified precontact cultural components in the county, 27, or 71 percent, are unidentifiable to a specific context. All or none of these may actually be Woodland components; we simply cannot say. The final complicating issue is that, in northern Minnesota, the Woodland period can be traced straight through to the protohistoric period and Euroamerican contact. This extended timeframe, coupled with the perceived lack of a Late Prehistoric or Village presence in the area, seems to lend credence to the notion of Woodland site dominance in the county; however, this hypothesis will require further investigation in order to provide a definitive answer.

3) **What is the potential for buried sites in the study area, particularly relative to those sites of greatest antiquity?** There is potential for buried archeology in all three of the county's topographical settings outlined above (see pages 168-169). In general, on upland and glacial beach ridge settings the potential for such sites is lower, although sites of Late Paleoindian through Middle Archaic-age may be buried by æolian sediments along beach ridges in the study area. On uplands in the extreme eastern portions of the county, sites predating approximately 2,000 years ago may also be buried beneath peat deposits. The potential for buried sites greatly increases in stream valley settings. The reason for this increased potential relates to the relatively young geologic age of the stream valleys in the county, previous climatic conditions, and resultant streamflow and depositional patterns. Because of these factors, there is high potential for buried sites of late Paleoindian through protohistoric-age in these settings.

4) **Where do prehistoric sites tend to be located and why?** Results of the current study seem to support previous findings of a strong correlation between prehistoric site distribution and proximity to major waterways in the study area (see discussion, above). However, it must be noted that the survey strategy was biased towards such localities, and comparatively little investigation of areas classified by MN/Model as *unknown* and *low probability* was undertaken.

Three discernible insights were generated by this study. First, Red Lake County should not be discounted in terms of prehistoric archeological site potential. The current investigation, despite examining less than two percent of the county's total land surface area, nearly tripled the total of numbered identified sites; Red Lake County is by no means lacking archeological resources. Second, traditional pedestrian surface survey of stream valley settings is *not* an adequate methodological approach for archeologists to employ in Red Lake County. Geomorphological investigations have demonstrated that the vast majority of the archeological record in such settings will be buried. Future archeological investigations in these areas should incorporate deep testing methodology, similar to that outlined by Monaghan et al. (2006), as a means of augmenting traditional surface investigation techniques. Such methodology should also be employed during any future investigation of peatlands in the eastern portions of the county. Finally, some mention should be made regarding the effect of filters on the archeological record, both in terms of prehistoric site locational evidence and modeling the distribution of these properties across the landscape. The archeological record is profoundly impacted by both environmental (e.g., erosion, burrowing animals, flooding, river channel migration) and cultural (e.g., cultivation, construction, artifact collecting) filtering mechanisms. These filters have altered the archeological record in many instances by either displacing or removing some or all evidence of a site in a given area. This can directly affect the way that archeologists document and model sites and their distribution, but perhaps more significantly, it can affect our ability to understand the ways in which our predecessors occupied the landscape and interacted with one another. These filters are actively at work in Red Lake County and, although little can be done to stop them, they must nevertheless be accounted for in our attempts to interpret human prehistory.

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APPENDIX A

REQUEST FOR PROPOSALS: INVESTIGATING POORLY KNOWN AREAS OF MINNESOTA – AN ARCHAEOLOGICAL SURVEY OF RED LAKE COUNTY

MINNESOTA HISTORICAL SOCIETY

Request for Proposals:
Investigating Poorly Known Areas of Minnesota -
An Archaeological Survey of Red Lake County

September 6, 2011

Overview

The Minnesota Historical Society (Society) and the Oversight Board of the Statewide Historical and Archaeological Survey (Board) seek a qualified consultant to conduct an archaeological survey of Red Lake County. The purposes of the project are to: summarize what is known about the prehistoric human occupation of the county; update the State Archaeologist's site file with regard to the status of known sites; find unrecorded sites; and build a basic narrative predictive model of where prehistoric sites should be located.

Background

Minnesota is a large state with a complex paleo-ecological history, a diverse modern environment, and greatly varying land-use patterns. Archaeological knowledge about the state is the product of a century and a half of research. Concentrated archaeological research began with the Hill-Lewis mound surveys in the late 19th century, continued with Jacob Brower's less formal surveys, became professionalized with the inception of the University of Minnesota's archaeological program in the 1930s, changed focus with the passage of cultural resource management laws in the 1960s, and greatly expanded with state university archaeological programs in the 1970s. While all of these programs contributed greatly to our knowledge of Minnesota's past, prior to the mid-1970s, there were few attempts to understand distributions of prehistoric sites in Minnesota and differences between site distributions in the various archaeological regions of the state.

In 1977, the State Historic Preservation Office (SHPO) received a Legislative grant to begin a formal statewide archaeological survey (SAS). Under the direction of Ted Lofstrom, the SAS investigated portions of 25 counties in Minnesota with the explicit objective "to formulate models that predict the distribution of archaeological sites throughout the state." The SAS surveyed about 80,000 acres and found over 1,000 previously unrecorded prehistoric sites. Building a predictive model was not the only objective of the SAS. Three other goals were stated in the overview report: to locate additional archaeological sites, to update the site files of the State Archaeologist, and to build an electronic "data bank" to be used for planning purposes. The SAS accomplished all four goals, although the final goal was never fully implemented as a planning tool because the electronic database resided on a single mainframe computer that was not widely accessible and was not updated after the demise of the SAS in late 1981.

A second ambitious attempt at developing a statewide site locational model was undertaken in the mid-1990s. Using mostly federal funds, the Minnesota Department of Transportation

(MnDOT) initiated the MnModel project in 1995 and contracted with Minneapolis-based consulting firm BRW Group, Inc. to complete the project. The objective of the project was to develop a high probability predictive model for identifying archaeological sites and then to make this model available to MnDOT planners and other development agencies to assess potential impacts to archaeological sites. Unlike the SAS model, which was essentially a narrative "expert systems" model, MnModel was proposed to be a computerized model utilizing new GIS technologies for both building the model and making it widely accessible. Two seasons of fieldwork, 1995 and 1996, resulted in portions of seven counties being surveyed with about 15,000 acres examined and 196 previously unrecorded prehistoric sites located. The BRW Group, Inc. contract ended in 1999 and MnDOT has continued to internally improve the electronic predictive model, but no additional county-level surveys have been undertaken. A final report was made available in 2002.

Of the 25 counties examined by SAS, 22 were based on some form of probabilistic survey, but the research strategy and field methods varied between the surveys. The MnModel research design also varied between the four counties surveyed in 1995 (stratified random parcel selection) and the three counties surveyed in 1996 (random parcel selection). In 1991, the SHPO initiated a survey of Traverse County that was designed to be probabilistic, but was not implemented as such. As all modeling researchers are well aware, a totally random survey of large areas of land using thorough field methods is the optimal way to build a high probability model of site locations. This way the biases of the investigators and the effects of random chance are greatly reduced. However, a totally random method is very expensive to implement and politically unsatisfying as many fewer sites are located.

If we plot these probabilistic survey counties, known site locations, and excavated sites on a map of Minnesota's archaeological regions, it becomes clear that there are poorly known archaeological regions and sub-regions that still exist in the state. The paucity of information from these areas limits our ability to reliably predict prehistoric site locations, to conduct focused archaeological research, and to provide the public with an accurate reconstruction of the prehistoric past. The poorest known areas are Sub-Region 3W, Sub-Region 2E, Sub-Region 2N, Sub-Region 6N, Sub-Region 7W, and Region 9. Within these areas, there are particular counties that are especially poorly known with regard to prehistoric archaeology.

Beginning in 2010, the Legacy Amendment-funded Statewide Survey of Historical and Archaeological Sites began to look at these poorly known regions and counties. Contracts for surveys were implemented for Swift County (Region 2N), Olmsted County (Region 3W), and Region 9 (eastern portions of Carlton, St. Louis, Lake, and Cook counties). The results of these surveys are still being analyzed, but preliminary results suggest that these counties have lower than average site numbers and site sizes, perhaps due to lower natural resource availability, density, and diversity.

As with the SHPO-sponsored SAS, the new Legacy-funded Statewide Survey project has multiple goals and limited funding. Thus the primary objective is not to complete an ideal (i.e., random) modeling survey, but to contribute substantially to our knowledge of the prehistoric past of Red Lake County and to make this knowledge accessible at many levels including archaeological research, cultural resource management planning, and public education. As with

the SAS, the primary objective of this project is to simply expand our knowledge of site locations within the county. Known archaeological sites have a much better chance of being considered and preserved than sites simply predicted to occur. Known sites have also have partially demonstrated their research potential.

Red Lake County is within two Minnesota Archaeological Regions and Sub-Regions: the western half of the county is in Sub-Region 6N (Northern Red River Valley) and the eastern half in Sub-Region 7W (Western Big Bog). The county is divided exactly in half by the two regions with 216 square miles in each half for a total of 432 square miles. Red Lake County was first settled by Euro-Americans in the late 1870s. Today most of the land is agricultural in both sub-regions.

Sub-Region 6N in Red Lake County is characterized by the lake-less flatlands of the Glacial Lake Agassiz plain with bands of north-south Agassiz beach ridges the only topographic relief. At the time of Euro-American settlement, the western half of the county was largely tallgrass prairie with a narrow river bottom oak-aspen forest along the Red Lake River and some brush prairie in the east. Small marshes were scattered along the back sides of the beach ridges. The Red Lake River is the major hydrological feature traversing and flowing adjacent to the beach ridges. The smaller Clearwater River joins the Red Lake at Red Lake Falls. There are no natural lakes in Red Lake County.

Eastern Red Lake County occupies a portion of the Beltrami Arm of the Lake Agassiz basin (Region 7W). Prominent beach ridges are largely absent. The Clearwater River flows through the northern part and the Lost, Hill, and Poplar Rivers through the southern part. Pre-Euro-American vegetation was aspen-oak forest along the major rivers, tallgrass prairie in the east, brush prairie in the north-central and oak parkland in the southeast. The northeast corner had peat lands.

There are currently only eight (8) Office of State Archaeologist (OSA)-numbered archaeological sites in Red Lake County of which all but one are prehistoric. The prehistoric sites include two mounds sites, three artifact or lithic scatters, and two single artifact sites. There are also 16 unnumbered (alpha) sites of which nine are prehistoric. The only professionally excavated sites in Red Lake County are the two numbered mound sites. Archaeological reconnaissance surveys in Red Lake County have been largely associated with narrow linear projects for highway and pipeline construction. Five of the eight numbered sites have been found by cultural resource management (CRM) surveys over the last 40 years.

Scope of Work

The purposes of this project are to summarize what is known about the prehistoric past of Red Lake County, to update the State Archaeologist's site file with regard to the status of known sites, to find unrecorded sites, and to build a narrative predictive model of where prehistoric sites should be located. The knowledge of site locations will help us to better protect these sites and better understand prehistoric cultures in the county. The narrative site locational model will assist federal, state, and local officials with cultural resources management obligations. The information should also be of great value to the on-going MnModel project as it should not only increase the number of known sites in the two sub-regions, but also utilize some probability

sampling and provide a better understanding of prehistoric cultural contexts for evaluating site types and significance.

Field survey locations should be determined by both probabilistic and non-probabilistic means utilizing a methodology consistent with the research design used for the 1995 MnModel field surveys (http://www.mnmodel.dot.state.mn.us/chapters/app_c.htm), although a method that maximizes finding previously unrecorded sites should dominate. Field methods must also follow MnModel standards with the addition of deep testing in appropriate locations like alluvial or colluvial settings in major river valleys. The failure to look for deeply buried sites (greater than 70 cm) was a major flaw in both the SAS and MnModel field surveys, although a non-archaeological geo-morphological component was an important part of MnModel to help determine where sites could and could not be located. MnDOT has also developed a deep-testing protocol to help define methods to efficiently find deeply buried archaeological sites.

The first task of the project will be to assess what is known about the prehistoric human occupation of Red Lake County by reviewing site records and reports, examining institutional artifact collections (including those of local historical societies), interviewing local artifact collectors, and reconstructing the paleo-environment. This compilation will allow the investigators to plot known and probable site locations, to assess what prehistoric cultural complexes (i.e., contexts) are known in the county, and to help fine-tune the research design for the reconnaissance survey. A MnModel generated map of the county should be obtained from MnDOT if possible showing High, Medium, and Low potential areas and this map as well as existing narrative models should be explicitly considered in the research design.

The second task of the project will be to conduct a field survey of the followings areas: 1) numbered prehistoric archaeological sites that have not been examined by a professional archaeologist in over 10 years (not including single-artifact-find locations); 2) unnumbered sites identified by the literature search and sites suggested by collector interviews; and 3) locations identified by the research design to find unknown sites or evaluate the potential of particular settings. At least half the locations must be part of a probabilistic survey. All prehistoric sites and all early historic sites (pre-1880) encountered in the field must be recorded on standard OSA site forms.

The final tasks will be to complete the following: 1) an analytical and descriptive report that summarizes the findings of the literature search, collections research, collector interviews, research design, fieldwork, and analysis; the report shall explicitly discuss site locational modeling considerations and needs for future research; 2) a narrative site locational model understandable by non-archaeologists that will assist agency officials in considering possible prehistoric site locations within the county; and 3) a short overview of the human prehistory of the county suitable for distribution to the public. All reports must properly credit the Legacy Amendment funding on the title page following the requirements provided by the Board. The exact location of sites must remain confidential and be made available only to the State Archaeologist, the State Historic Preservation Office, appropriate agencies, and landowners. Boundaries of all survey parcels and field-examined sites must be reported in GIS format (UTM NAD 83).

Contract Requirements
The Principal Investigator must be a *Qualified Archaeologist* eligible to be licensed by the OSA for Reconnaissance (Phase 1) Surveys and must have experience identifying prehistoric artifacts, field surveying for prehistoric sites, and be familiar with site locational modeling. The Principal Investigator must have a demonstrated ability to complete projects in a thorough and timely manner. Any deep testing should include a professional geo-morphologist as a team member.

Monthly progress reports that briefly summarize research activities, fieldwork, problems, and accomplishments must be submitted to the Board. These monthly reports may be submitted as emails. Final electronic submittals should be on a compact disc.

A draft final report must be submitted to the Board 30 days prior to the project completion date of June 30, 2012. The Board shall get comments to the contractor 10 days after draft submittal. The contractor shall provide the Board with 10 paper copies of the revised final report as well as an electronic copy in Microsoft Word or PDF format by June 30, 2012. The report must meet the requirements of the *State Archaeologist's Manual for Archaeological Projects in Minnesota* (2011). Research files and digital photographs of field sites must also be submitted. Site inventory forms must be completed for all the field-surveyed sites evidencing archaeological remains, prehistoric or early historic.

Content of Proposals
Interested parties must submit a detailed proposal clearly outlining methods to be used and personnel involved with conducting the literature search, collections research, interviews, analysis, and survey.

The following items should be included:

- a detailed discussion of methods that will be utilized;
- a narrative description of key personnel's experience working on similar projects;
- *curriculum vitae* for the Principal Investigator and other key personnel;
- a budget for each aspect of the proposal, detailing hourly costs for the Principal Investigator and other personnel, expenses, and overhead charges; and
- a proposed timeline for completion of each task (that allows for up to one month for the contract execution and the official project start date).

Note, too, that proposers are always encouraged to suggest alternative approaches or innovations that might better accomplish the objectives of the project.

Submission of Proposals
Four (4) hard copies of a proposal must be received by Kathryn Ludwig, Contracting Officer, Minnesota Historical Society, 345 Kellogg Boulevard West, St. Paul, Minnesota 55102-1906, or by a staff member at the first floor reception desk no later than 2:00 p.m. Local Time, Wednesday, September 28, 2011. Late proposals will not be considered.

Proposals must be submitted in a sealed envelope or package with the proposer's name, address and the name of the project for which the proposal is being submitted clearly written on the outside. Bids must be signed in ink by the individual proposer or an authorized member of the proposer firm.

Review of Proposals/Project Considerations

Evaluation of proposals and the selection of the winning one will be based on the "best value" approach identified in MN Statutes Chapter 16C.02, Subd. 4, whereby ultimate selection of the winning contractor is determined not just by price but by other factors, including the proposer's relevant experience and past performance, as well as a research approach that explicitly addresses the project requirements. Note, too, that the proposals will be evaluated and scored on a consensus basis, not by calculating a total number from individual rating sheets.

Nevertheless, the project cost may not exceed $70,000 and the eventual contract will be based on a fixed-sum, without regard to time and materials actually expended.

The Society will make partial payments upon submission of invoices if the Project Coordinator certifies that sufficient progress has been made to justify payment. No more than seventy-five percent (75%) of the total contract amount will be paid prior to acceptance of the final report.

Reservation of Rights

The Society and the Board reserve the following rights: not to proceed with contracting of the project; to enter into contracts with multiple proposers; and/or to re-issue a similar request for proposals at a future time.

Society Contacts

Questions regarding contracting procedures or project scope and products should be directed to Kathryn Ludwig, Contracting Officer, at kathryn.ludwig@mnhs.org. Questions will be accepted until 2 p.m. on Monday, September 19, 2011. An anonymous summary of all questions received and their answers will be relayed via email to all requesters of the proposal within a reasonable time thereafter.

APPENDIX B

ARCHEOLOGICAL SITE FORMS

LOCATION INFORMATION EDITED

APPENDIX C

RADIOCARBON DATA

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Prairie Research Institute
Illinois State Geological Survey

615 East Peabody Drive
Champaign, Illinois 61820

AMS ^{14}C assays for Mandel: *November 6, 2012*

ISGS #	Sample #	Material	$\delta^{13}C$	Fraction of MC	±	$D^{14}C$	±	^{14}C yr BP	±
A2336	RDM-BRULE-66-67	Charcoal	-23.5	0.7923	0.0019	-207.7	1.9	1870	20
A2337	RDM-BRULE-112-116	Charcoal	-25.6	0.7736	0.0015	-226.4	1.5	2060	20
A2338	RDM-POLK-168-172	Charcoal	-25.7	0.5777	0.0014	-422.3	1.4	4405	20

The half-life of 5568 is used for the age calculation. It is reported as BP (before present defined as before 1950). MC-Modern Carbon.

Hong Wang

Director of Geochronology Laboratory
Illinois State Geological Survey
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UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Prairie Research Institute
Illinois State Geological Survey

615 East Peabody Drive
Champaign, Illinois 61820

AMS ^{14}C assays for Mandel: *November 20, 2012*

ISGS #	Sample #	Material	$\delta^{13}C$	Fraction of MC	±	$D^{14}C$	±	^{14}C yr BP	±
A2369	RDM-Core1 MN-40-50	Soil	-25.7	0.8858	0.0018	-114.2	1.8	975	20
A2370	RDM-Core2 MN-105-115	Soil	-24.5	0.5720	0.0013	-428.0	1.3	4485	20
A2371	RDM-Core3 MN -160-170	Soil	-24.3	0.5141	0.0013	-485.9	1.3	5345	25
A2372	RDM-Core4 MN 79-89	Soil	-24.9	0.6663	0.0014	-333.7	1.4	3260	20

The half-life of 5568 is used for the age calculation. It is reported as BP (before present defined as before 1950). MC-Modern Carbon.

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Conventional ^{14}C dates for Mandel: *October 25, 2012*

ISGS #	Sample #	Material	$\delta^{13}C$	^{14}C yr BP	±
6941	RDM-BRULE-133-134	Charcoal	-23.8	2190	160
6942	RDM-BRULE-175-185	Charcoal	-24.7	2430	70
6943	RDM-POLK-145-148	Charcoal	-23.9	4130	100

The half-life of 5568 is used for the age calculation. It is reported as BP (before present defined as before 1950).

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APPENDIX D

AN OVERVIEW OF THE HUMAN PREHISTORY OF RED LAKE COUNTY & NORTHWESTERN MINNESOTA

AN OVERVIEW OF THE HUMAN PREHISTORY OF RED LAKE COUNTY & NORTHWESTERN MINNESOTA

The prehistory of northwestern Minnesota, including that of Red Lake County, is poorly understood. This is largely the result of the lack of archeological research conducted in the area to-date; however, other factors may also be at play. The information that does exist from Red Lake County and the broader northwestern Minnesota area suggests a continuing human presence on the landscape from at least about 9,500 years ago to the present.

As a means of facilitating the evaluation and interpretation of archeological properties, the Minnesota State Historic Preservation Office developed a statewide historic context document outlining and describing the various prehistoric cultures who occupied Minnesota between about 12,000 and 300 years ago (Dobbs 1989). Through time, archeologists have made changes to the terminology of these contexts and have combined certain elements or split groups as new information has become available. Basically, there are five primary contexts, or stages, that help to explain Minnesota's prehistory. These contexts, from oldest to most recent, are: *Pre-Paleoindian*; *Paleoindian*; *Archaic*; *Woodland*; and *Late Prehistoric*. No conclusive evidence of a Pre-Paleoindian context has been identified in Minnesota to-date; however, recent finds from neighboring areas of the Midwest and Plains hint at the increasing likelihood of a human presence in Minnesota even earlier than was originally believed. This document focuses on the remaining four contexts through a general discussion of their characteristics and when they occupied the landscape, as well as their significance to the archeology of northwestern Minnesota and Red Lake County.

PALEOINDIAN PERIOD

The Paleoindian tradition represents the earliest identified archeological manifestation in Minnesota, dating between roughly 12,000 and 8,000 years ago. Paleoindian peoples were adapted to the hunting of ***megafauna*** and other large game during the terminal ***Pleistocene*** and early ***Holocene***. However, recent studies have provided increasing evidence to suggest that foraging and small game hunting strategies played equal, and sometimes more prominent, roles in the subsistence strategies of certain Paleoindian groups (see Bamforth 2007; Frison and Walker 2007).

Archeological evidence of this tradition comes mainly from isolated surface finds and small, temporary encampments associated with the butchering of mammoths and extinct forms of bison. The many projectile point styles and their widespread geographic distribution suggest that these groups lived a highly nomadic lifestyle (Frison 1991).

As the climate became more temperate and the ice sheets began to retreat during the Paleoindian period in Minnesota, the environment changed rapidly from a landscape dominated by glaciers, tundra, and spruce parkland to one with more extensive deciduous communities. As the glaciers receded, they left behind a tremendous amount of meltwater. In many instances, glacial debris had dammed the outlets for this meltwater and resulted in the formation of a series of massive proglacial lakes (Ojakangas and Matsch 2004). Largest among these was Glacial Lake Agassiz. By approximately 13,000 years ago, the lake had grown to such an extent that it covered the entirety of northwestern Minnesota, including Red Lake County. Agassiz was the largest lake in the history of North America. At its greatest extent, it covered a vast area that included portions of North Dakota, South Dakota, Minnesota, Manitoba, Ontario, and Saskatchewan (Waters 1977).

Megafauna Large or giant animals. In the present context, the reference is to extinct Ice Age varieties that were much larger than their present-day counterparts. This includes such animals as mammoths, ancient bison, and ground sloths, among others.

Pleistocene A geologic epoch lasting from about 2.6 million years ago to 11,500 years ago. The Pleistocene is characterized by a multitude of glacial events, the last of which, commonly known as the "Last Ice Age," resulted in the glaciation of large portions of North America, including nearly all of what is now Minnesota.

Holocene The current geologic epoch that began with the end of the Pleistocene around 11,500 years ago. The Holocene is known as an interglacial that is generally characterized by a trend in climatic warming.

Eventually, Lake Agassiz drained in multiple, large-scale events. The lake fell in stages, which is evidenced by the presence of numerous parallel, linear beaches of sand and gravel deposited in portions of Red Lake County. Five sets of ridges were initially identified and studied by geologist Warren Upham (1895). Upham (1895) attributed the presence of these ridges to the stabilization of the Agassiz shoreline following successive draining events. He named the beach ridges, in order of earliest to most recent, Herman, Norcross, Tintah,

Campbell, and McCauleyville (McCall 1961). A recent series of dates obtained from Agassiz strandlines near Fargo have provided a provisional age of 14,000 years ago for the Herman Beach and an age range from 10,600-10,300 years ago for the Campbell Beach (Lepper et al. 2011:1206). Strandlines associated with the Campbell Beach are present in the western part of Red Lake County and a small, separate area of beach deposits, associated with the older Herman Phase, is present in the county's southeastern corner. This means that almost all of Red Lake County was underwater 14,000 years ago, and that the westernmost portions were still inundated by about 10,500 years ago. It wasn't until about 10,000 years ago that the lake receded from the entire county.

Archeologists generally divide the Paleoindian period into *early* and *late* subperiods. The early Paleoindian period is tentatively assigned to a time frame of 12,000-10,500 years ago; however, the precise time and duration of this period are poorly understood because there is a general lack of identified Paleoindian sites in the state and none are radiocarbon dated. The most characteristic trait of early Paleoindian cultures identified in the archeological record is a unique series of lanceolate spear points with large, distinctive flakes removed from the center of one or both surfaces (Figure 1). These large flakes, or flutes, were evidently removed to assist in the process of hafting the point to the wooden shaft of the spear. The two most widely recognized fluted projectile point styles identified in Minnesota are Clovis and Folsom (see Figure 1, left two specimens); however, other fluted point styles have also been documented in Minnesota.

Figure 1. Selection of Paleoindian projectile points demonstrating the variation between given complexes. Complexes represented from left to right are: Clovis, Folsom, Agate Basin, Hell Gap, Eden, and Dalton (specimens from Augustana College Archeology Laboratory comparative collection).

The late Paleoindian period is assigned to an approximate time frame of 10,500-8,000 years ago. Late Paleoindian projectile points are commonly long and ***lanceolate*** or stemmed lanceolate in form and lack the distinctive fluting present on the earliest specimens. Other common traits observed among late Paleoindian projectile points are generally high-quality craftsmanship, ground and thinned bases, and frequent, parallel serial flake patterning either perpendicular or at an oblique angle to the base. Although late Paleoindian projectiles share several notable traits, a considerable range of variation does exist between the different identified forms (see Figure 1, right four specimens). In Minnesota, some ten named styles of late Paleoindian projectile points have been identified to-date. Of these styles, half have been identified in the northwestern part of the state.

Evidence of Paleoindian groups in northwestern Minnesota is extremely scarce and the majority of artifacts identified in association with these groups are isolated surface finds documented in collections of local avocationals (Florin 1996; Magner 1994). No Paleoindian sites have been formally documented in Red Lake County; however, two lanceolate points, reportedly found near Huot, were recently observed in the private collection of a local resident, and Paleoindian points have been recorded in other private and public artifact collections from elsewhere in northwestern Minnesota (Anfinson n.d.; Florin 1996; Magner 1994), as well as at the professionally excavated Donarski site (21MA33) in Marshall County (Kluth and Hudak 2004:36-39). Previous site and collections research in northwestern Minnesota has demonstrated a clear connection between Paleoindian artifacts, including that recovered from the Donarski site, and the multitude of relict beach ridge landforms associated with Glacial Lake Agassiz (Magner 1994:61; Kluth and Hudak 2004:10-11).

Lanceolate In this context, a class of long, narrow, lance-shaped flaked stone projectile points with a pointed apex and lacking shoulders, notches, or stems to assist in hafting.

Atlatl The atlatl, or "spear thrower," is a small wooden tool used to assist in throwing darts, or small, narrow spears. It is essentially a short stick, about 1.5-2 feet long and 1 inch wide, with a small spur on one end. The device served as an extension of the user's arm, allowing for one to propel darts at much higher velocities and at far greater distances than was previously possible.

Dart Short, narrow spears averaging about 4-9 feet long that were used in conjunction with an atlatl for hunting game.

Old Copper Culture A cultural designation assigned to a suite of hammered copper implements that date to the Middle or Late Archaic (about 5,000-3,000 years ago). The majority of these artifacts were discovered in eastern Wisconsin, but finds have been documented from Iowa, Michigan, Minnesota, Illinois, and Ontario (Mason 1998:606).

ARCHAIC PERIOD

The transition between the Pleistocene and the Holocene was accompanied by many significant changes, including a warmer, drier climate, the extinction of numerous species of megafauna, and an increase in bison populations across the Plains of North America. Among early New World inhabitants, these changes necessitated adaptations in subsistence strategies, which focused upon a far broader spectrum of resources. The result was an increase in reliance upon foraging and local plant materials, as well as the hunting of smaller game species and, in the western part of the state, the numerous bison beginning to populate the area. Between approximately 5,000 and 3,000 years ago, the use of native copper for ornament and tool production appears in artifact assemblages from Minnesota as part of the ***Old Copper Culture*** (Mason 1998:606-608). Additionally, ***atlatl*** and ***dart*** hunting technology became far more prevalent during this time, a trend reflected in the smaller notched and stemmed projectile point forms that come to characterize the period (Figure 2).

Figure 2. Selection of Plains Archaic projectile points. Complexes represented from left to right are: Yonkee, Oxbow, Pelican Lake, and Besant (specimens from Augustana College Archeology Laboratory comparative collection).

The Archaic in North America spans a considerable timeframe between at least 8,500 and 2,000 years ago, though in many areas it is dated even earlier. The Archaic was traditionally subdivided into *Early*, *Middle*, and *Late* periods; however, there is increasing evidence that suggests this division may not be as distinct as was originally believed.

In Minnesota, the earliest known Archaic presence is an eastern manifestation that first appears in the archeological record in the southeastern corner of the state. Gibbon (2012:51-57) considers the Early Eastern Archaic groups to be contemporaries of the Late Paleoindians in the state and suggests that their subsistence strategy was based on the hunting of land animals. Evidence from several Plains Archaic sites suggests a heavy reliance on bison hunting (Anderson and Semken 1980; Michlovic 1987; Shay 1971); however, a variety of other resources were also utilized when available (Dobbs 1989:92-95; Shay 1978).

Although the environment in which the Archaic period groups lived was as dynamic as that of the Paleoindians, it was, in just about every other respect, very different. The Holocene ushered in a climate to North America that was significantly warmer and more arid than that which prevailed during the terminal Pleistocene. The Middle and Late Archaic groups were forced to contend with these conditions most directly. At its most severe, during the ***Hypsithermal***, annual precipitation levels in and around Minnesota were potentially 20 percent less than today, and average temperatures were warmer by about 5° F (Gibbon 2012:66). As a result of these changes, the range of prevalent plant biomes in Minnesota was dramatically altered. Sometime after around 8,000 years ago, the deciduous forests had retreated about one hundred miles northeast of their present range (Gibbon 2012:66) and were entirely replaced by open prairie. This prairie covered almost all of northwestern Minnesota during this time, including all of Red Lake County. Shortly after the end of the Hypsithermal, the climate slowly became cooler and wetter. As the climate again changed, so too did the plant communities in Minnesota. The woodlands began to extend further south and west, replacing the prairie. By the end of the Archaic period, or shortly thereafter, the climate and environment began to closely mirror that of the present day (Gibbon 2012:72).

> ***Hypsithermal*** A climatic warm period during the Holocene which lasted from approximately 9,000-5,000 years ago. During this period, temperatures in the Northern Hemisphere were substantially warmer than the present day, while little to no temperature change was reported at mid and lower latitudes.

In northwestern Minnesota, the majority of archeological research concerning the Archaic period has focused on the Red River Valley Region. Detailed site studies have been carried out southwest of Red Lake County at the Canning and Moody sites (Michlovic 1983, 1985, 1986, 1987) and north of the study area at the Donarski site (Kluth and Hudak 2004). Johnson (1964:12-14) identified 17 Archaic-age Old Copper artifacts that had been collected from along or near Lake Agassiz beach ridges between Browns Valley and Marshall County. No Archaic-period sites have been professionally documented in Red Lake County. However, two native copper projectile points were collected from the surface of plowed fields in the county, sometime in the early 1900s, by a collector named J. F. Norman (Jenson 1962:65; Johnson 1964:13). In 1953, Norman donated these and other copper artifacts collected from the region to the Science Museum of Minnesota (Jenson 1962:65). Both copper projectiles are suspected to be Archaic in age.

WOODLAND PERIOD

The Woodland period (approximately 3,000-300 years ago) featured the introduction of new technologies, economies, and social practices throughout the Plains and Upper Midwest. Broadly speaking, Woodland subsistence strategies are considered comparable to those of the preceding Archaic tradition, augmented by an increased reliance upon horticultural practices (Gibbon 1998:230) and, later in Minnesota, upon the harvesting of wild rice (Johnson 1994:3-32). Additional changes of significance during this time include the introduction of ceramics, semi-permanent dwellings, increased population density (Grange 1980; Hill and Kivett 1940; Hoffman 1968; Johnson 1994:3-32), bow and arrow utilization, and burial mound construction (Howard 1968; Johnson 1973; Neuman 1975).

In the eastern United States, the Woodland tradition is divided into *Early*, *Middle*, and *Late* periods; however, Dobbs (1989:106) questioned the applicability of a traditional 'Woodland' classification for Minnesota. He notes that, except perhaps in the southeastern quarter of the state, there really is no manifestation of 'Early' Woodland in Minnesota's archeological record (Dobbs 1989:107) in terms of the traditional definition. Many of the other hallmarks of the period, such as horticultural practices and burial mound construction, occurred late relative to ceramic technology, which itself developed at different times in different parts of the state (Anfinson and Wright 1990:222; Dobbs 1989:106).

Arzigian (2008:1) identifies 11 historic contexts associated with the Woodland tradition in Minnesota. These contexts are: the *Brainerd Complex*, the *Southeast Minnesota Early Woodland Complex*, the *Havana–Related Complex*, the *Laurel Complex*, the *Fox Lake Complex*, the *Lake Benton Complex*, the *Central Minnesota Transitional Woodland Complex*, the *Southeast Minnesota Late Woodland Complex*, the *Blackduck-Kathio Complex*, the *Rainy River Late Woodland Complex*, and the *Psinomani Complex*. Those contexts most relevant to Red Lake County and northwestern Minnesota are the Laurel and Blackduck-Kathio complexes. A few sites with Brainerd and Central Minnesota Transitional Woodland ceramics have been documented in northwestern Minnesota, as have a fair number of later Psinomani sites; however, many of the Psinomani sites in this area appear to be concentrated further west along the valley of the Red River of the North (Arzigian 2008:196-211).

Chronologically, the Brainerd complex is the earliest of northern and central Minnesota's Woodland-period contexts, dating from approximately 2,750-1,700 years ago (Hohman-Caine and Syms 2012:ii). The presence of Brainerd complex sites in northwestern Minnesota is very ephemeral and no such sites have yet been identified in Red Lake County. People of the Brainerd complex are believed to have maintained a subsistence economy very similar to that of the preceding Archaic, and a variety of projectile point styles associated with this complex exhibit similarities to both certain Archaic period points as well as to other northern Plains Woodland varieties (Arzigian 2008:19). Brainerd ceramic wares are characteristically cone-shaped jars with a net-impressed or horizontal cord-marked surface treatment and a somewhat porous, fine sandy paste (Hohman-Caine and Goltz 1995:115).

The Laurel complex is a northern Minnesota Middle Woodland manifestation dating from approximately 2,150-1,350 years ago. The majority of identified Laurel sites are concentrated to the east and southeast of Red Lake County. Fewer than 20 Laurel sites have been documented in the northwestern Minnesota region (Arzigian 2008:53). In Red Lake County, the Red Lake River Mounds site, 21RL1, has a suspected Laurel component. Laurel groups appear to have been adapted to a northern forest hunting and gathering economy that included the procurement of fish, moose, deer, beaver, other small game, and, further to the west, bison (Arzigian 2008:53). Traits characteristic of Laurel include mounds with elaborate burials, stemmed and notched projectile points, a variety of copper and bone tools, and ceramic vessels with grit-temper and smoothed surfaces decorated with a variety of different stamped impressions (Arzigian 2008:53; Figure 3).

Figure 3. A reconstructed Laurel vessel from the Smith site (21KC3) in Koochiching County (image from the University of Minnesota Photograph Archive).

The Central Minnesota Transitional Woodland complex, which spans some 700 years from approximately 1,700-1,000 years ago, covers the transitional period between culture groups of the more commonly identified Middle and Late Woodland periods (Arzigian 2008:85). This complex is largely a central Minnesota manifestation; however, a small selection of five sites with components from this complex has been documented in northwestern Minnesota (Arzigian 2008:206). In Red Lake County, one site with a suspected component from this complex has been documented. This site, the Red Lake River Mounds site (21RL1), also includes a suspected earlier Laurel component and a Late Woodland component.

The Blackduck-Kathio complex is a northern and central Minnesota terminal Woodland manifestation dating from approximately 900-600 years ago. Blackduck is the most commonly reported Woodland-period component in northern Minnesota; however, only 16 sites with Blackduck components have been documented in the northwestern Minnesota region (Arzigian 2008:107). A northwestern Minnesota burial mound site at Lake Bronson, 21KT1, yielded a ceramic mortuary vessel of Blackduck design (Anfinson et al. 1978). One site with a suspected Blackduck affiliation, 21RL3, has been documented in Red Lake County. Both habitation and burial mound sites with Blackduck components have been identified in northern Minnesota. Artifacts characteristic of this complex include small,

notched and unnotched triangular arrow points, a variety of bone and some copper tools and ornaments (Arzigian 2008:106). Blackduck ceramics exhibit a wide range of stylistic variation. Jars are typically more rounded, or globular, with cordwrapped paddle surface treatments, grit-tempering, constricted necks, short, outward flaring and sometimes thickened rims, and flattened lips. Decoration, which is typically confined to the upper part of the vessel, includes stamping, comb-stamping, punctations, and brushing (Gibbon 2008a).

The ***Psinomani*** complex represents the latest of northern and central Minnesota's Woodland-period contexts. It is first recognized in the terminal Woodland and can be further traced through the protohistoric and even into early historic times. This complex occupies a timeframe of some 650 years from approximately 900-250 years ago (Arzigian 2008:126). Forty-six Psinomani sites have been documented in the northwestern Minnesota region (Arzigian 2008:211); however, none have yet been identified in Red Lake County. Adaptive strategies practiced by Psinomani groups included the harvesting of wild rice, fishing, and the hunting of bison and other small and large mammals. Artifacts characteristic of this culture include small, triangular projectile points, Sandy Lake Ware pottery, and, in some areas, Ogechie pottery (Arzigian 2008:126). Ogechie, a variant of Oneota pottery, is generally found further south of the Red Lake County study area. Sandy Lake Ware vessels are more commonplace in northwestern Minnesota. Sandy Lake vessels are characteristically globular pots with slightly constricted necks and straight rims (Figure 4). The paste oftentimes appears layered, and both grit and crushed mussel shell were used for temper. Surface treatments are either smoothed, cord-marked, or stamp-impressed. Decoration on these vessels is typically minimal. When it is present, decoration is usually restricted to lip notching and interior rim punctates (Gibbon 2008b).

Figure 4. A reconstructed Sandy Lake ware vessel from site 21ML33 in Mille Lacs County (image from the Minnesota Historical Society Photograph Archive).

Psinomani A terminal Woodland, protohistoric, and early historic archeological complex in northern and central Minnesota named after the Dakota term for "wild rice gatherers." People associated with this complex have been identified as early Siouan-speakers and linked to the historic Mdewakanton Dakota (Arzigian 2008:126).

LATE PREHISTORIC PERIOD

The Late Prehistoric period (approximately 1,000-300 years ago) is traditionally associated with the continued development of horticulture and construction of semisubterranean earthlodge dwellings in large, complex village settlements; both of these practices reflect an increasingly sedentary lifestyle (Scheiber 2006:597; Scott et al. 2006:35). Settlement fortification is common during this time, suggesting that the increased levels of interaction were not always on friendly terms. Additionally, projectile point technology increasingly favors smaller, corner- and side-notched varieties, suggesting a greater reliance upon the bow and arrow for the hunting of bison and other game (Frison 1991:111). In contrast to the Woodland period, Late Prehistoric ceramics traditionally exhibit thinner vessel walls, hotter and more even firing, and a broader range of decorative motifs and stylistic designs.

In the northeastern Plains and the prairie-forest border, these developments were, however, scaled-back as compared to some of the massive earthlodge villages found along the Missouri River further to the west. Fortification systems were still common among village settlements of the northeastern Plains, but the expansive villages seen along the Missouri were replaced with much smaller "hamlets" (Holley and Michlovic 2010:14). It appears that there was also less reliance on intensive farming practices but a continued focus on bison hunting augmented by the hunting and gathering of additional local resources (Michlovic 2008:35; State Historical Society of North Dakota [SHSND] 1990:B.36).

The transition between the Woodland and Late Prehistoric periods in northern Minnesota is poorly defined. Rather than village cultures replacing Woodland groups, as was common on the Plains, the Woodland tradition in northern Minnesota seems to persist until European contact. The Late Prehistoric presence in the northwestern part of the state

generally appears to be a complex interaction among groups from the northeastern Plains, the Psinomani, and others from the lake-forest region further east (Dobbs 1989:185; Toom 2004). Much of the archeological evidence for this is found along the Red River Valley further west and south of the study area.

Although the majority of Late Prehistoric sites are largely absent from the archeological record of northwestern Minnesota, a Plains Village presence *has* been documented in the Red River Valley just west of Red Lake County. The ***Northeastern Plains Village*** complex (NEPV), first identified by Picha and Gregg (SHSND 1990:B.36-37), occupied an area including western Minnesota, eastern South Dakota and North Dakota, northwestern Iowa, southwestern Manitoba and southeastern Saskatchewan between approximately 1,000 and 200 years ago (Holley and Michlovic 2010:14). These people occupied fortified hamlets that were smaller and more simplistic than the extensive earthlodge villages built further west by their Middle Missouri contemporaries, and their subsistence was focused less intensely on agriculture (Holley and Michlovic 2010:14). Given the documented presence of this group throughout the Red River Valley, it is entirely plausible that some degree of NEPV presence could be expected within Red Lake County as well.

Northeastern Plains Village A Late Prehistoric village complex that typically occupied small, fortified earthlodge hamlets in western Minnesota, eastern South Dakota and North Dakota, northwestern Iowa, southwestern Manitoba, and southeastern Saskatchewan. The society practiced a subsistence economy that focused on bison hunting but also included some agriculture.

Oneota A widespread, Late Prehistoric archeological culture centered in southern Wisconsin and Minnesota, Iowa, and parts of northern Illinois (Gibbon 1998:612-613). Oneota societies were largely sedentary villages that practiced a combined agricultural and bison hunting subsistence economy. Archeologically, Oneota is largely characterized by its hallmark pottery; shell-tempered globular pots with distinctive design motifs.

In addition to the NEPV, an ***Oneota*** presence in the northeastern Plains and Minnesota's lake-forest region has been documented for some time (see Gibbon 1995; Michlovic 1983:25). Holley and Michlovic (2010:13) place the Oneota presence in this area between approximately 700 and 400 years ago. The Oneota tradition is a Mississippian-influenced cultural phenomenon characterized by largely sedentary village societies centered on a combined agricultural and bison hunting subsistence economy. It is largely defined within the archeological record by its hallmark pottery; shell-tempered, globular pots with smoothed surfaces, constricted necks, outward-flaring rims, and a distinct design motif consisting of broad rectilinear patterns confined to the vessel shoulder area (Anfinson 1979:39). The majority of sites with Oneota or Oneota-like ceramics identified in northwestern Minnesota and southeastern North Dakota are clustered around the Red River Valley; however, it is not beyond the realm of possibility that such sites are present within Red Lake County.

THE PROTOHISTORIC PERIOD AND EARLY EUROPEAN CONTACT

When the first European explorers reached what is now Red Lake County in the late-seventeenth/early eighteenth century (approximately 300 years ago), the area was home to groups of Siouan-speaking Assiniboine and Dakota peoples, as well as to members of the Algonquian-speaking Cree (Magner and Dudzik 1995:4). The archeological record of the period immediately preceding European contact in northern Minnesota can be classified as "cloudy." What is known about this time suggests that significant and abrupt lifeway changes were occurring. Gibbon (2012:198-199) attributes these perceived changes to the emergence of a tribal lifeway that favored a diversified subsistence economy oriented around an increasingly sedentary "collection" strategy. This strategy placed a greater emphasis on stored foods and the harvesting of wild rice and other aquatic resources (such as fish, migratory waterfowl, and mollusks) while deemphasizing (though not abandoning) the more mobile "foraging" strategy that focused on the exploitation of large terrestrial mammals. These changes also would have resulted in the concentration of population groups into more permanent, centralized settlements (Gibbon 2012:199). In northwestern Minnesota, archeological evidence of these changes is most readily apparent among site assemblages attributable to the Psinomani complex. As previously mentioned, archeologists have yet to identify a Psinomani site in Red Lake County. However, their documented presence elsewhere in northwestern Minnesota, coupled with historical and ethnographic evidence of later tribal groups in the Red Lake County area, suggests that these sites will also eventually be identified in the county.

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