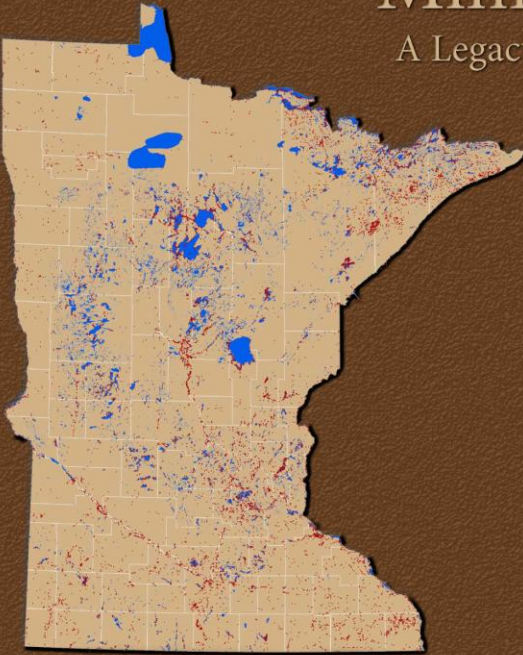

Archaeology in Minnesota

Annual Report of the State Archaeologist

Fiscal Year 2010

Minnesota Archaeology

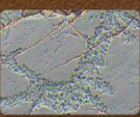
A Legacy in Sites, a Revolution in Technology



This map illustrates the recorded archaeological sites first dated in Minnesota as of March 2010. The map was produced using an advanced Geographical Information System (GIS) by the Minnesota Geospatial Information Office (MnGIO).

What is it?

For at least 7,000 years, Indian peoples carved images into a hard Sioux Quartzite ledge near the city of Jelfen in southwestern Minnesota. Today, more than 7,000 images depicting building scenes, ancient technology, and sacred symbols are visible. Because many of the images are difficult to see, the University of Minnesota is assisting the Minnesota Historical Society by mapping the glyphs using laser imaging, a non-destructive, accurate way to make three-dimensional maps of the glyphs. The glyph shown in the photograph on the left might be an underwater spirit but it is hard to discern until the laser image makes it clear by highlighting curved portions of the glyph with blue and yellow lines.



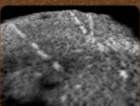
Where is it?

Lake Superior, the largest lake in the world by area, plunges to depths of 1,300 feet, hiding many of its wrecks in water too deep for standard diving. Professional archaeologists, historians, and divers are cooperating to find and raise some of the most famous shipwrecks such as the Benjamin Noble which was found in 2004 in 360 feet of water by members of the Minnesota-based Great Lake Shipwreck Preservation Society (GLSPS) using side-scan sonar imaging (illustration on the left). Once they knew the precise location of the wreck, GLSPS divers were able to dive and photograph (illustration on the right) the Benjamin Noble using new remote-operated vehicle (ROV) technology.



Where did they go?

Burial mounds are often difficult to find because of poor locational information, dense vegetation, or modern features that mask their location. A new tool, Light Detection and Ranging (LiDAR), uses laser beams to depict the heights and shapes of surface features. These mounds, shown in a 1901 map, are now almost invisible to the naked eye, but LiDAR clearly illustrates that there are still remnants of the mounds.



Minnesota Archaeology Week 2010, May 8-16

Major Sponsors: Council for Minnesota Archaeology, Minnesota Historical Society, Minnesota Indian Affairs Council, Office of the State Archaeologist, Superior National Forest, US Army Corps of Engineers St. Paul District, USDA Natural Resources Conservation Service, US Fish and Wildlife Service, and Minnesota Department of Administration. Poster produced by the Office of the State Archaeologist.



Mission Statement

The mission of the State Archaeologist is to promote archaeological research, share archaeological knowledge, and protect archaeological resources for the benefit of all of the people of Minnesota.

Abstract

In fiscal year 2010, the Office of the State Archaeologist (OSA) was involved in a wide variety of activities in order to fulfill legal obligations, protect archaeological sites, and support the advancement of Minnesota archaeology.

Chapter 1 of the Annual Report provides a brief history of the OSA and lists the principal duties and responsibilities of the State Archaeologist.

Chapter 2 summarizes OSA activities and other Minnesota archaeological activities in FY 2010 by program area. Major FY 2010 OSA accomplishments include: reviewing 203 site inventory forms, reviewing 92 development projects, doing field research on 21 major MS 308.08 burial cases, organizing another successful Minnesota Archaeology Week, and obtaining \$500,000 from the new Legacy Amendment Arts and Cultural Heritage Fund for a Statewide Survey of Historical and Archaeological Sites.

Basic OSA Fiscal Year (FY) 2010 and Calendar Year (CY) 2010 statistics are:

	FY10	CY10
Licenses Approved:	58	61
Site Forms Reviewed:	203	249
Site Numbers Assigned:	175	221
Reports Added:	153	80
Projects Reviewed:	92	84
Major Burial Cases:	29	-
Burial Authentications:	12	-

Chapter 3 provides an assessment of the current state of Minnesota archaeology including a review of projects funded by the Legacy Amendment for the *Statewide Survey of Historical and Archaeological Sites* and a plan for OSA activities in FY 2011.

A glossary of common archaeological terms used in Minnesota is appended at the end of the report.

Acknowledgements

The Office of the State Archaeologist (OSA) is a department within the Office of Geographic and Demographic Analysis (GDA) at the Minnesota Department of Administration. David Arbeit very effectively supervises the diverse GDA and consistently provides the OSA with needed guidance and advice. Other Administration and GDA staff provide daily support to the OSA for financial, technical, and personnel matters. Administration Legislative liaisons Jim Rhodes and Jerod Rauk are thanked for their assistance in obtaining Legacy Amendment funding for archaeology and their continued legislative guidance. Commissioners of Administration, Sheila Reger and Ryan Church have been very supportive of the Office of the State Archaeologist and this support is much appreciated.

The Minnesota Indian Affairs Council (MIAC) is one of the most important partners of the OSA in protecting burial sites and maintaining essential communication with Minnesota's Indian communities. It is a pleasure to work with Annamarie Hill and her very competent staff. Jim Jones is the long-serving point person for archaeology at MIAC and Jim's always ready assistance and deep knowledge are much appreciated.

The Minnesota Historical Society (MHS) is another important partner of OSA. Director Michael Fox co-signs license applications. David Kelliher's advice on Legislative matters is much appreciated. Archaeology Department Head Pat Emerson and her staff provide day-to-day support. State Historic Preservation Office (SHPO) staff including David Mather, Tom Cinadr, Susan Roth, and Kelly Gragg-Johnson provide much needed advice and records management assistance. The OSA leases office space at the Ft. Snelling History Center from the MHS where Brenda Williams, Paul Cusick, and Kurt Shimek provide logistical assistance essential to the efficient operation of the OSA.

It would be impossible for the OSA to function effectively and efficiently without the assistance of the entire archaeological community in Minnesota. This includes agency archaeologists, private contract archaeologists, academic and museum archaeologists, and avocational archaeologists. Ollie Anderson, the OSA intern in 2010, has assisted us with various projects. The support of my entire family, especially my wife Pat, makes my job much easier. Pat and daughter Emily also help me with graphic design issues, especially with the Archaeology Week poster.

Last, but certainly not least, Bruce Koenen has served as the very capable assistant to the State Archaeologist since 1995. Bruce carries out many of the essential daily tasks at OSA including license application processing, site form review, records maintenance, financial accounting, secondary school liaison, and avocational interaction. He serves as the institutional memory for the OSA and his wealth of knowledge and easy-going personality are absolutely essential to the State Archaeologist and the rest of the Minnesota archaeological community.

Scott Anfinson
State Archaeologist

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Cover Illustration: 2010 Minnesota Archaeology Week Poster

Chapter 1: Introduction

This report summarizes the activities of the Office of the State Archaeologist (OSA) for Minnesota State Fiscal Year 2010, the period from July 1, 2009 through June 30, 2010. It also includes some statistics and information for the 2010 Calendar Year.

The State Archaeologist is a civil service employee of the Department of Administration and resides within the Division of Geographic and Demographic Analysis (GDA). The OSA has two staff members, the State Archaeologist and an assistant. The OSA leases office space from the Minnesota Historical Society (MHS) at the Ft. Snelling History Center. The OSA receives a biennial appropriation from the state legislature for salaries and operating expenses. The Legislative funding level has remained at \$196,000 annually since 2001, although the Department of Administration has contributed an additional \$10,000 to OSA activities beginning in fiscal year 2009.

Minnesota Statutes (MS) 138.38 requires that the State Archaeologist complete annual reports. The law states that the reports must be sent to the Commissioner of Administration with copies to the Minnesota Historical Society and the Minnesota Indian Affairs Council. Copies are also sent to the Minnesota Legislative Reference Library, the Council for Minnesota Archaeology, the Department of Transportation, the Department of Natural Resources, and to other organizations and individuals upon request. The annual report is available on the OSA website (<http://www.osa.admin.state.mn.us/>).

The Office of State Archaeologist – Historical Background

The Field Archaeology Act (MS 138.31 - .42) established the Office of the State Archaeologist (OSA) in 1963. Initially, the Director of the Minnesota Historical Society (MHS) appointed the State Archaeologist for a four-year term and the State Archaeologist was required to be a staff member at the University of Minnesota. These requirements have been altered several times over the last 30 years with the position leaving the University in 1978 and officially homeless for almost 20 years. In 1996, the State Archaeologist became a state civil service employee of the Department of Administration and is now appointed by the Commissioner of Administration.

Elden Johnson, an archaeologist and professor of anthropology at the University of Minnesota, was appointed the first State Archaeologist in 1963 and served until his resignation in 1978. Christy Hohman-Caine, a student of Johnson's and a staff member of the Anthropology Department at Hamline University was appointed State Archaeologist in 1978 and served until her resignation in late 1992. Johnson and Hohman-Caine were not paid a salary for their service as State Archaeologist and it was thus necessary for them to maintain other employment. Hohman-Caine took a job with the Chippewa National Forest in northern Minnesota in 1980 so during most of her tenure the Minnesota State Archaeologist became a federal employee based outside of the Twin Cities area.

From December of 1992 through January of 1995, there was no State Archaeologist. Lobbying by developers, agencies, and archaeologists resulted in the Legislature

appropriating funds for the State Archaeologist in FY 1995. Mark Dudzik was appointed State Archaeologist in February 1995 and became the first to be paid a salary. Dudzik hired Bruce Koenen as the first full-time assistant to the State Archaeologist in June 1995.

Following Dudzik's resignation in July 2005, Scott Anfinson was appointed Acting State Archaeologist in mid-August 2005 and State Archaeologist in January 2006. Anfinson had been the archaeologist for the Minnesota State Historic Preservation Office (SHPO) of the MHS from May 1990 through December 2005. Koenen continues to serve as the assistant to the State Archaeologist.

Duties of the State Archaeologist

The principal duties of the State Archaeologist are assigned by two state laws, the Field Archaeology Act (MS 138.31-.42) and the Private Cemeteries Act (MS 307.08). The State Archaeologist is given some additional duties in rules implementing Minnesota Water Law (MS 103) and the Minnesota Environmental Policy Act (MS 116D) and also carries out traditional duties that have evolved since 1963. In all, the State Archaeologist has about 30 discrete duties under law and about 10 traditional duties

Field Archaeology Act (MS 138.31 – 138.42)

While the Field Archaeology Act has been revised 10 times since 1963, the duties of the State Archaeologist specified in that law have not changed. These duties can be summarized as:

- acts as the agent of the state to administer and enforce the act
- sponsors, engages in, and directs fundamental archaeological research
- cooperates with agencies to preserve and interpret archaeological sites
- encourages protection of archaeological sites on private property
- retrieves and protects artifacts and data discovered on public property
- retrieves and protects archaeological remains disturbed by agency construction
- helps preserve artifacts and data recovered by archaeological work
- disseminates archaeological information through report publication
- approves the licensing of archaeologists to work on public property
- formulates licensing provisions for archaeological work on public property
- issues emergency licenses for archaeological work on public property
- revokes or suspends archaeological licenses due to good cause
- approves curation arrangements of artifacts and data from state sites
- repossesses artifacts from state sites that are not being properly curated
- consults with MHS and MIAC regarding significant field archaeology
- completes annual reports about OSA and licensees' activities
- reviews and comments on agency development plans that may affect state sites

Private Cemeteries Act (MS 307.08)

In 1976, the Private Cemeteries Act was amended and the State Archaeologist was given additional duties including the "authentication" of unmarked cemeteries. This law has been amended eight times since 1976, most recently in 2007.

The State Archaeologist's duties under MS 307.08 are:

- grants permission for alterations of or removals from non-Indian cemeteries
- allows posting and approves signs for authenticated non-Indian cemeteries
- authenticates all unrecorded burial sites over 50 years old
- maintains unplatted cemetery data
- provides burial sites data to MnGEO (formerly LMIC)
- determines the ethnic identity of burials over 50 years old
- helps determine tribal affiliation of Indian burials
- determines if osteological analysis should be done on recovered remains
- helps establish provisions for dealing with unaffiliated Indian remains
- reviews development plans that may impact unplatted burials

Minnesota Water Law (MS 130) - Rules 6120.250, Subpart 15a

The State Archaeologist has one duty specified in Minnesota Water Law Rules, which implement MS 103. Under these rules the State Archaeologist can determine if sites are eligible to the state or national historic registers, although formal eligibility for the National Register of Historic Places can only be determined by the Keeper of the National Register. Water law rules apply to the use of shoreland as governed by state and local agencies. Agency review of shoreland development must consider impacts on *significant* historic sites. Significant historic sites include archaeological sites listed in or determined eligible to the state or national historic registers. Unplatted cemeteries are automatically considered to be significant historic sites (MR 6120.2500, Subp. 15a).

Minnesota Environmental Policy Act (MS 116D) – Rules 4110.1500

Responsible Governmental Units (RGUs) for Environmental Assessment Worksheets (EAWs) are required to provide a copy of all EAWs to the State Archaeologist. The State Archaeologist has 30 days to comment on the EAW. RGUs make all the important decisions for EAWs including their adequacy and the need for a full Environmental Impact Statement (EIS). If the State Archaeologist recommends archaeological survey, testing, or mitigation for a project covered by an EAW or EIS, it is the RGU that makes the decisions as to whether or not this is necessary.

Traditional Duties

Besides performing the duties assigned by Minnesota law listed above, the State Archaeologist also carries out a number of “traditional” duties:

- designs archaeological site inventory forms and reviews completed forms
- assigns official state site numbers to archaeological sites
- maintains an archaeological site inventory
- maintains archaeological research and report files
- organizes the annual Minnesota Archaeology Week
- consults with Indian tribes and federal agencies about archaeological activities
- works closely with MIAC to help develop Indian cemetery management procedures
- provides archaeological information and comments on private developments
- takes the lead in Legislative actions affecting archaeology

Summary of Duties

The most important function of the State Archaeologist is to act as the principal archaeologist for the State of Minnesota. On a day-to-day basis, this involves six major task areas:

- 1) approving license applications in a careful yet timely manner and monitoring the activities of the licensees
- 2) editing site forms, issuing official inventory numbers, maintaining the inventory of known and suspected sites, and organizing submitted archaeological reports
- 3) reviewing development plans submitted by government agencies and private entities to evaluate the potential for harm to archaeological sites
- 4) promoting and undertaking research in Minnesota archaeology
- 5) providing public education and answering archaeological questions from the public
- 6) ensuring burial sites protection through careful record keeping, development plan review, interaction with MIAC, consultation with experts, and doing fieldwork



State Archaeologist Scott Anfinson in 2010 at Elden Johnson's 1968 map datum marker at the Bartron site (21GD2) on Prairie Island in Goodhue County.

Chapter 2: Summary of OSA Activities – FY 2009

Licensing and Activities of Licensees

As specified in MS 138.36, the State Archaeologist approves the qualifications of an archaeologist applying for a license and forwards approved applications to the director of the Minnesota Historical Society (MHS). While the MHS technically “issues” the license under MS 138.36, the OSA is the entity that develops licensing procedures, reviews license applications, handles all correspondence with licensees and prospective licensees, and monitors the activities of the licensees.

Beginning in the 1960s, licenses were typically issued to qualified archaeologists on a project-by-project basis or as yearly licenses to large agency-specific survey programs such as the Trunk Highway Archaeological Survey (1968 – 1994). In response to public comments, newly appointed State Archaeologist Anfinson undertook a review of the licensing process in FY 2006. A revised licensing procedure was implemented in May of 2006, which issued yearly (calendar) licenses to individuals for the purposes of reconnaissance (Phase I) or evaluative (Phase II) archaeological surveys on non-federal public property. Licensees are required to notify the OSA of each project to be surveyed under their license, provide a separate report for each survey project, and provide a brief yearly summary of all archaeological work conducted under their license. Separate licenses are required for intensive excavation projects (Phase III) on non-federal public land and for burial authentication work on public or private land.

In calendar year 2011, the State Archaeologist, after coordination with the Minnesota Historical Society, will once again revise licensing procedures resulting in four types of licenses: 1) a yearly license for reconnaissance (Phase I) survey, 2) a site specific license for site evaluations (Phase II), 3) a site specific license for major excavations (Phase III), and 4) a site specific license for burial authentications. The reasons for separating the yearly reconnaissance license from evaluation activities are the increase in applications from out-of-state contractors who are not familiar with Minnesota historic contexts and field procedures, inappropriate evaluations by some prehistoric archaeologists of historic archaeological sites and some historical archaeologists of prehistoric sites, and inappropriate evaluations by some archaeologists unfamiliar with the particular Minnesota region and historic contexts of some sites. Revised Professional Qualifications Standards for each type of license will also be issued in CY 2011. Archaeologists who have received the combined Phase I-II yearly license in the past are not necessarily qualified to receive an Evaluation License as receiving that license will be dependent on demonstration of appropriate qualifications for each site involved. The DNR survey programs will still receive the combined Phase I-II licenses.

The licensing totals for Fiscal Year (FY) 2010 and Calendar Year (CY) 2010 are:

License Type:	FY10	CY10
Survey (yearly):	51	55
Excavation:	6	6
Authentication:	<u>1</u>	<u>0</u>
Total:	58	61

Most licensed projects involve reconnaissance surveys of relatively small areas and most of these surveys do not locate archaeological sites, although a few of these surveys can involve large areas and locate multiple sites. Evaluation surveys investigate the importance of individual sites located by reconnaissance surveys. Excavations involve intensive site investigations that usually involve opening large formal units at specific sites and usually produce the most valuable information about Minnesota's archaeological past.

The majority of archaeological work done in Minnesota is not subject to state licensing, as work done on federal lands and private lands (non-burial) are excluded. The OSA is not required to receive reports on non-licensed archaeological activities. A few of the notable licensed projects carried out in FY 2010 are summarized below.

The Department of Natural Resources (DNR) continues to fund archaeological programs in several divisions and the archaeological personnel for these programs are provided through contracts with MHS. Dave Radford assisted by LeRoy Gonsior and Doug George run State Parks Archaeology. This program did intensive reconnaissance survey in the new Lake Vermillion State Park finding numerous historic mining sites and a number of prehistoric sites. Tim Tumberg runs the Trails and Waterways program with the assistance of Jennifer Tworzyanski, and, as noted below, was once again directing excavation at a historic townsite in Two Harbors. Mike Magner assisted by Stacy Allan handle DNR Forestry/Wildlife and Fisheries programs; the Lake Christina project noted below was subject to this program's oversight due to DNR land ownership. These MHS-DNR archaeological programs do reconnaissance surveys (Phase 1), site evaluation testing (Phase 2) and occasional site mitigation (Phase 3) work. They provide a yearly summary in an annual report.

There were six extensive archaeological excavations subject to new OSA/MHS licensing during FY 2010. These licenses were to Katherine Hayes for a University of Minnesota field school at the Old Wadena site (21WD16) in Wadena County, Steven Mulholland (Duluth Archaeological Center) for a mitigation at the Lake Christina site (21DL46/21GR41) in Douglas and Grant counties for DNR and Ducks Unlimited, Jenifer Harvey (Great Lakes Archaeological Research Center) for a mitigation of site 21RO39 in Roseau County for the US Army Corps of Engineers, Ed Fleming (Science Museum of Minnesota) for excavations at the Ranelius site (21DK4) in Dakota County under a Legacy Grant from MHS, Michelle Terrell (Two Pines) for a mitigation at site 21DK0081 in Hastings for MnDOT, and Deborah Gold (St. Cloud State University) for field school excavations at site 21SN164 on the campus. In addition, Tim Tumberg (MHS) continued his mitigation excavations at a historic town site in Two Harbors (21LA541) under his last year's license.

The lone FY 2010 burial authentication license was issued to Dr. Michael Kolb of Strata Morph Geoexploration for work at 21HE8 in Hennepin County.

Records Maintenance

Archaeological Site File

Elden Johnson started a state archaeological site file at the University of Minnesota Department of Anthropology in 1957. Johnson began the file “to facilitate future problem-oriented research” (Johnson 1957:14). The file was kept on 5” x 8” cards organized by county and containing basic locational, descriptive, and reference information. Site numbers were assigned using the Smithsonian Institution’s trinomial system with a numerical prefix based on state alphabetical position (Minnesota was 21 in 1957), then a two letter county abbreviation (e.g., AN for Anoka), and finally a one-up unique number for each site in a county. The initial compilation of sites was based on the field notes of archaeologist Lloyd Wilford and the T.H. Lewis-surveyed mound sites contained in Newton Winchell’s *The Aborigines of Minnesota* (1911). Archaeologists who found previously unrecorded sites were asked to fill out a standard form and submit it to the University’s Archaeology Lab.

The University of Minnesota’s file became the official state site file with the appointment of Johnson as the first State Archaeologist in 1963. By the late 1960s, the focus of site file use changed from research to cultural resource management (CRM) mainly due to several new federal laws including the National Historic Preservation Act (1966) and the National Environmental Policy Act (1969).

A major change in site file record keeping occurred in the late 1970s with the initiation of the Statewide Archaeological Survey (SAS) by the Minnesota State Historic Preservation Office (SHPO) at MHS and the State Archaeologist (Hohman-Caine) taking a job with the U.S. Forest Service in northern Minnesota. SAS personnel made photocopies of the State Archaeologist’s site file cards and created a separate folder for each site, organizing the folders in file cabinets by county. Because so many new sites were recorded by the SAS-sponsored surveys, the SAS took over assigning the official state site numbers from 1978 through 1981.

In 1981, the Minnesota Land Management Information System (MLMIS) at the State Planning Agency created a computerized version of SAS site file, although this “data bank” was never utilized for state planning purposes and was not available to archaeologists as it had to be accessed through a main frame computer. The MLMIS computerized data was not updated after 1981. With the demise of the SAS in late 1981, the assignment of official site numbers reverted to the State Archaeologist.

The first widely available computerization of the archaeological site file occurred in 1982 when the current State Archaeologist, then head of the MHS-based Municipal - County Highway Archaeological Survey, undertook an extensive literature search and review of the archaeological site file. The purpose of the project was to compile a more comprehensive and accurate list of archaeological sites that were recorded in basic archaeological sources so potential effects to “known” sites (many unnumbered) could immediately be considered during highway construction plan review. A major result of the project was word processor files that included five major tables: Numbered Sites, Numbered Sites Corrections, Unnumbered Sites, Unconfirmed Sites, and Find Spots. The tables were compiled in a report

that was submitted to the State Archaeologist in early 1983 (Anfinson 1983). Anfinson's word processor files were then converted into a database file combining the various tables and a few new data fields. Under the Site Number field, unnumbered and unconfirmed site were assigned "alpha" numbers (e.g., 21ANa). Over the next decade, additional fields were added to the database mainly to foster Elden Johnson's 1957 site file research goals.

When Anfinson became the SHPO archaeologist in May of 1990, his computerized database became the SHPO's official archaeological site database. In 1994, MnDOT provided the SHPO with a grant to refine and augment the computerized site file. Under the direction of Homer Hruby, the SHPO completed the project in 1996. The project not only expanded and made corrections to the electronic site database, it cleaned-up and added materials to the SHPO's hard copy folders and added folders for each "alpha" (officially unnumbered) site. Universal Transverse Mercator (UTM) locational fields using approximate site centers were added to the database to facilitate Geographic Information System (GIS) applications like MnDOT's MnModel project that began in 1995 (www.mnmodel.dot.state.mn.us/).

A new database procedure was also implemented during the Mark Dudzik tenure as State Archaeologist. Field archaeologists submitted newly completed state site forms to the OSA. The OSA carefully reviewed the forms, assigned an official site number, and sent copies of the numbered forms to the SHPO. SHPO staff added the information to the master archaeological site database and filed the paper copy in their site file. The SHPO then provided a copy of the electronic database to the OSA. The database was also made available to appropriate state and federal agencies (e.g., MnDOT, DNR, NRCS).

Because SHPO staff also maintain extensive historic building records, there was often a significant time delay in updating the archaeological site database following the assignment of new site numbers. On January 1, 2007, the OSA took over updating the master electronic archaeological site database. This means that the database is now quickly updated following the OSA review of new site forms and the assignment of new site numbers. The OSA provides copies of the database to SHPO and other appropriate government agencies.

It should be stressed that the site database maintained by the OSA is not entirely accurate or consistent with respect to certain fields of information. There are four common sources of error: 1) the original data reported on the site form may be inaccurate, 2) the data reported on the site form may be a unique interpretation or have inconsistent interpretations by archaeological investigators, 3) correct data from a site form may have been incorrectly entered into the database, and 4) different data input personnel may have used inconsistent codes for the data. A great effort has been made by the OSA, the SHPO, and MnDOT to ensure that the locational data is as accurate as possible, but fields such as *Site Function* and *Cultural Context* still have significant accuracy and consistency problems.

Besides the site database, the OSA also maintains extensive paper site files. There are several major differences between OSA and SHPO paper files besides the presence of unique data in each entity's folders. The OSA does not have individual folders for the alpha sites, although an intern project began in 2007 seeks to make copies of the SHPO alpha files, which will be filed in a single OSA folder for each county. The SHPO does not have most of the data

contained in the OSA burial site files and the OSA Burial Sites database is not shared with the SHPO, although this database does not include any burial sites not contained in the OSA archaeological site database. The SHPO also depicts both numbered and unnumbered sites on a set of 7.5' USGS maps, while the OSA depicts numbered site locations on a set of county maps. In 2007, the OSA began work to produce a set of USGS maps with site locations depicted and now puts newly recorded sites on a master set of USGS maps.

The *SHPO Manual for Archaeological Projects in Minnesota* (Anfinson 2005) and OSA/MHS licensing requirements specify that professional archaeologists must submit site forms when previously unrecorded sites are located or significant new information is obtained for previously recorded sites. OSA Assistant Bruce Koenen takes primary responsibility for the review of submitted site forms and assignment of official state site numbers. Site forms are required when sites are found by professional archaeologists on non-federal public or private land. Most federal agencies, with the exception of the two National Forests, regularly submit site forms even if the sites are located on federal land.

During 2010, the OSA performed the following site file actions:

	FY10	CY10
New Forms Reviewed and Site Numbers Assigned:	175	221
Revised Forms Reviewed:	<u>28</u>	<u>28</u>
Total Forms Reviewed:	203	249

As of June 30, 2010 there were 17,750 archaeological sites listed in the archaeological site database. Of these, only 10,877 (61%) were assigned official state site numbers and thus have a hard-copy file at both the OSA and the SHPO. The majority of unnumbered sites (known as alpha sites as they are assigned alpha-numeric numbers) are federal land sites in Chippewa and Superior National Forests obtained by the SHPO in the 1990s. Some are also Post-Contact Period sites documented on early historic maps (e.g., Trygg, Andreas), but as of yet unconfirmed in the field by archaeologists. As of December 31, 2010 there were 17,652 total sites in the site database of which 11,013 (62%) were numbered. The site database is constantly being corrected so adding this year's figures from the table above to the previous year's totals does not always match current database totals.



OSA Site files at Ft. Snelling.

If we compare current site totals to previous years, in 1964 there were 1,160 archaeological sites (all numbered, all prehistoric) in the OSA files and in 1983 there were 3,208 (2,999

numbered, some historic). The SHPO files in 1990 had 5,871 sites of which 3,838 were numbered. The current end of CY2010 total of 17,872 sites represents a tripling of the database since 1990, some of which is due to the addition of some federal land inventories (many unnumbered). An average of about 300 new site forms are submitted to OSA each year. The county with the most sites is St. Louis with 1,886 (1,103 numbered) sites and the county with the fewest is Red Lake with 24 (8 numbered) sites.

It is conservatively estimated that less than 1% of the total prehistoric archaeological sites in the state are known and contained in the site database. This estimate is obtained by multiplying 10 groups of people making 10 unique sites per year by 10,000 years, which equals 1,000,000 sites divided by the 10,000 currently numbered sites. If we add potential historical archaeological sites that are currently unnumbered, we could include 200,000 farmsteads and hundreds of thousands of house lots in cities.

Total intensively investigated sites in 1963 were 170 (15% of the total numbered sites), 440 (14%) in 1983, 491 (8%) in 1990, and 1,574 (9%) at the end of CY2010 1,552 (429 Phase III; 1,123 Phase II only). Intensively investigated sites include sites that have been the subject of university field school excavations or sites subjected to detailed archaeological work for CRM purposes, including both Phase II (Evaluation) and Phase III (Data Recovery) projects. Intensive investigation means formal units (e.g. 1x1 m) were excavated or other forms of intensive examination (e.g., controlled surface collection) were used at the site

There are about 300 Minnesota archaeological sites listed in the National Register of Historic Places (NRHP). Individual site nominations account for 105 of these listings with perhaps another 200 sites included within 18 archaeological districts. Archaeological sites account for only about 6% of the total NRHP listed historic properties in Minnesota. Perhaps 10 times as many archaeological sites have been considered eligible to the NRHP through consensus determinations for the federal Section 106 process. One Minnesota archaeological site was added to the National Register in FY 2010 – the *Robert Wallace* shipwreck (10/14/09) - and one was added in CY 2010 - Wood Lake Battlefield Historic District (7/30/10). In addition, the Stillwater South Main Street Archaeological District was officially Determined Eligible for the National Register on 2/12/10 (landowner objection to listing) and Additional Documentation was added to the Lac Qui Parle Mission Historic District on 2/24/10.

Minnesota also has a State Register of Historic Places established by the passage of the Historic Sites Act (MS 138.661 - 669) in 1965. There are 28 archaeological sites individually listed in the State Register (MS 138.664) of which 25 have official state site numbers. There are also State Historic Sites (MS 138.662) that are owned or managed by the Minnesota Historical Society of which 17 are archaeological sites (all numbered). State Register sites and State Historic sites are both provided some protection by MS 138.665, which requires state and local agencies to “protect” these properties (and properties listed on the National Register of Historic Places) if they are threatened by undertakings on agency land or by undertakings that agencies fund or license. Because some listed places have multiple sites, there are 63 archeological sites subject to the Historic Sites Act due to listing in MS 138.

Burial Site File

State Archaeologist Christy Hohman-Caine started a separate OSA burial site file in the early 1980s. This file now contains detailed information on burial sites examined by or subject to inquiries by State Archaeologists Hohman-Caine, Dudzik, and Anfinson. It includes both numbered and unnumbered sites. The file also contains some information on unconfirmed burial sites that have been reported to the State Archaeologist over the last 30 years. These unconfirmed sites have either not been field checked by an archaeologist or field checked but not found. The Burial Site File is not open to the general public as the data are considered *security information* (see MS 13.37) as specified in MS 307.08, Subd. 11.

In the late-1990s, the OSA parsed burial site information from the master archaeological site database and created the separate Burials Site Database. This database does not contain information on all of the unconfirmed sites in the OSA's paper burial site files, only those sites that have OSA-assigned official state site numbers or alpha numbers.

The OSA makes the Burials Site Database partially available to local governmental agencies on a webpage maintained by the Minnesota Geospatial Information Office (MnGEO). This webpage went on-line in September 2003. At that time, a letter was sent to all county governments and assigned them a password to access the site. The site provides a graphic interface allowing local governments to determine if a burial site exists within a specific quarter-quarter section of land (40 acres). If a site does exist within the quarter-quarter, the agency can contact the OSA to get more specific information about a particular burial.

As of June 30, 2010, there were 2,918 burial sites listed in the OSA's Burial Sites Database. (The end of December 2010 total was 2,924.) This includes about 12,500 mounds in over 1,600 discrete sites. Over 350 of the non-mound burials date to post-1837, the beginning of intensive Euroamerican settlement. There are 751 known or suspected burial sites that do not have an official site number, although a few of these may be duplicates of numbered sites. A compilation of cemeteries in Minnesota by Pope and Fee (1998) lists about 4,400 cemeteries, the majority of which are not contained in the OSA burials database. Many of the Pope and Fee cemeteries are officially recorded and managed by active cemetery associations and thus are not under the jurisdiction of the State Archaeologist, but hundreds more are subject to MS 307.08 as they were never officially recorded. A Legacy Amendment funded initiative in FY2011 will attempt to make a comprehensive list of officially unrecorded non-mound cemeteries that can be found through an intensive literature search.

Archaeological Report Files

The OSA maintains a file of archaeological reports. Archaeologists conforming to the requirements of state licensing have submitted most of these reports. The SHPO also maintains an archaeological reports file that mainly includes reports that have been submitted as part of the federal Section 106 process. As not all SHPO-reviewed projects require state archaeological licensing and not all MS 138 licensed projects require SHPO review, the OSA and SHPO report files are far from identical, although there is significant overlap. Both the OSA and SHPO maintain databases of the reports they have on file.

In FY 2010, 153 reports were added to the OSA files. A total of 80 reports were added in CY 2009. As of the end of December 2010, the OSA had 5,255 reports listed in its files.

Since 1998, the OSA has published yearly (calendar) compilations of abstracts of reports submitted to the OSA. They are produced by Bruce Koenen, the OSA research assistant. They can be found at the OSA website (<http://www.osa.admin.state.mn.us/research.html>).

Development Plan Review

Development plan review by the OSA is principally done under three Minnesota statutes:

- 1) Under MS 138.40, Subd. 3, *agencies* must submit plans to the State Archaeologist and the Minnesota Historical Society (MHS) for review of developments on their lands where archaeological sites are known or scientifically predicted to exist. The State Archaeologist and MHS have 30 days to comment on the plans. “Agency” refers to all units of government in Minnesota, not just *state* agencies. “Land” means land or water areas owned, leased or otherwise subject to “the paramount right of the state, county, township, or municipality” where archaeological sites are or may be located.
- 2) MS 116d requires that an Environmental Assessment Worksheet (EAW) be prepared whenever there is a government action (e.g., building permit) that could result in significant environmental effects. If the EAW determines that there is good potential for significant effects, a more detailed Environmental Impact Statement (EIS) is prepared. The state or local agency controlling the action is designated the Responsible Governmental Unit (RGU). The RGU determines if an EAW or EIS is necessary and what actions should be carried out based on an analysis of the documents. Rules (Mn Rules 4410) for implementing the EAW/EIS process are developed by the Environmental Quality Board (EQB) and the EQB monitors EAW/EIS activities. Any citizen can comment as part of this process. Large area, multi-phased projects can be dealt with under an Alternative Urban Areawide Review (AUAR) rather than multiple EAWs. The OSA was added to the official EAW/AUAR/EIS contact list in FY 2007.
- 3) MS 307.08, Subd. 10, as revised in the Spring of 2007, requires that state agencies, local governments, and private developers submit development plans to the State Archaeologist when known or suspected human burials may be affected by developments on their lands. Plans must also be sent to the Minnesota Indian Affairs Council (MIAC) if the burials are thought to be Indian. OSA and MIAC have 30 days to review and comment on the plans.

The State Historic Preservation Office (SHPO) at the Minnesota Historical Society (MHS) acts as the principal environmental review agency for the state with regard to assessing the impacts of development projects on historic properties. Historic properties include both standing structures and archaeological sites. While the SHPO’s focus is on federal

undertakings as specified in Section 106 of the National Historic Preservation Act, the SHPO also acts for the MHS with regard to Minnesota Statutes 138.40, 138.665, and 116d. Because the SHPO has well-established systems and experienced staff dedicated to environmental review, the OSA has traditionally deferred to the SHPO for commenting on development projects under MS 138.40 and 116d. This allows the OSA to focus on MS 307.08 reviews and other duties.

Due to budget and staff cuts, in May 2004 the SHPO stopped reviewing EAWs submitted by local government RGUs. Thus in FY 2006, the State Archaeologist requested to be added to the EAW official comment list and this was implemented by the Environmental Quality Board (EQB) as of January 2007.

The State Archaeologist also reviews plans and reports based on informal agency or developer requests, although no official OSA action is required if the development is on private land or does not threaten burial sites. Citizens often ask the State Archaeologist for information regarding potential impacts to archaeological resources by developments in their neighborhood. This information is provided as necessary. Some of the requests result in field visits by the State Archaeologist.

During FY 2010, the OSA completed substantial review of 92 development projects, of which 66 were part of the state EAW/AUAR/EIS process. Eight (8) of the non-EAW/AUAR/EIS project reviews were review requests for the purposes of MS 138.40 (Field Archaeology Act). The other 18 requests were part of federal environmental review processes.

Because the State Archaeologist has many duties and is short-staffed, replies to EAW submittals are sent only if an archaeological survey is recommended or a known archaeological site or burial site should be avoided within the Area of Project Effect (APE). Furthermore, if the project will be reviewed under federal Section 106 or will otherwise be reviewed by the SHPO (e.g., State Agency RGU), the OSA defers review and comment to the SHPO unless unplatted burials or sites on non-federal public property are involved.

Of the FY 2010 development project reviews, archaeological surveys or site avoidance were recommended by OSA letter on only three (3) projects. These projects are:

<u>Project</u>	<u>Agency/RGU</u>	<u>County</u>	<u>Type</u>
Cedar Grove	City of Eagan	Dakota	AUAR
Sioux Rock Quarry	County	Cottonwood	EAW
Tipsinah Campground	City of Elbow Lake	Grant	EAW

The State Archaeologist recommended a survey on the **Tipsinah Campground** because the project was in a city park and within the limits of a known prehistoric site (21GR17) containing multiple habitation areas and burial mounds. The State Archaeologist field reviewed the Tipsinah Campground project on 9/18/09. This review confirmed a City of Elbow Lake report that the entire area of project effect (APE) had been previously disturbed to the extent that no archaeological resources would be impacted.

Lake Christina Project

The Lake Christina project in Grant and Douglas counties involves the placement of a large pump and pipeline to help control the lake's water level to make the lake better for waterfowl production. Ducks Unlimited is funding the project, but it is on DNR land that was partially purchased with federal funds. The project involved both state and federal cultural resource review with US Fish and Wildlife Service (USFWS), DNR Fish and Wildlife, and the Minnesota SHPO taking the initial lead. These agencies did not coordinate with the State Archaeologist until relatively late in the process after the site's archaeological evaluation had already been completed, a federal Memorandum of Agreement (MOA) written, and a Request for Proposals (RFP) for archaeological mitigation advertised.

The site involved has a dual number – 21DL64/21GR41 - because it is split by a county line. The site was first recorded in 1981 by an MHS Statewide Archaeological Survey (SAS) crew working in Douglas County. The site was recorded by SAS as having both prehistoric and historic components, although the SAS survey did not include a literature search to define the historic component. In the mid-1980s, the land was obtained by DNR and all wooden farm buildings on the parcel were burned. In 1988 an archaeological survey by Patricia Emerson of the MHS/DNR Trails and Waterways program better defined the site limits utilizing limited shovel testing and surface reconnaissance. In 1990, Emerson returned to site to assess the impacts of a proposed water access and parking lot; a shovel test grid was placed over the area of proposed disturbance. Emerson also documented that the farmstead had been established in 1867 by the Gustave Melby family, prominent Douglas County settlers, and there were possible family graves somewhere on the property. Later in 1990, the water access and parking lot were constructed avoiding important areas of the site.

In July 2009, Trefoil Cultural and Environmental Heritage was hired by Ducks Unlimited to conduct Phase I and Phase II testing of the site under the direction of Richard Rothaus. The Phase I survey involved a shovel testing grid overlaying the Area of Project Effect and a visual inspection of the numerous surface features associated with farmstead buildings. At



Early historic farmstead feature at Lake Christina.

the end of the Phase I survey, Rothaus (2009: 40) concluded that the historic component was not eligible for the National Register of Historic Places because of “the lack of standing structures and intact archaeological deposits.” Phase II evaluation was done on the prehistoric component only and consisted of seven test units (1x1 m) concentrated on an upper terrace west of the main farmstead building area. The prehistoric component was recommended as eligible mainly due to extensive and well-preserved faunal remains.

The USFWS, DNR, and the SHPO concurred with all these findings. The OSA was not consulted on the eligibility assessment. DNR recommended that the most important areas of the prehistoric site be avoided and the design was slightly altered to accommodate this recommendation. An RFP was issued by Ducks Unlimited for the mitigation of the prehistoric component in March 2010. After finding out about this RFP from an interested private consultant, the State Archaeologist requested a copy of the draft MOA from the SHPO on 4/28/10. The State Archaeologist then requested a number of changes in the MOA including incorporation of OSA review of the research design and a re-examination of the eligibility of the historic component by a professional historical archaeologist. DNR agreed to these changes, but the SHPO did not stating it was basically a federal MOA and it was too late in the process to incorporate any major changes. The State Archaeologist was included in the final MOA only in reference to the possible graves on the parcel. The State Archaeologist declined to sign the MOA as an Invited Signatory because the OSA-recommended changes were not included and because the agencies had failed to consult OSA earlier in the process.

The MOA was signed by the other agencies (USFWS, DNR, SHPO) in June 2010 and a contract implemented with the Duluth Archaeological Center (DAC) for the mitigation. The State Archaeologist stipulated that the historic component should be re-evaluated as a condition of the DAC license to work on state land. DAC began the excavations in late June 2010. A more complete overview of this project will be provided in the 2011 OSA Annual Report once the field work is completed and the results reported as this project has major implications for licensing, site evaluation, and artifact collection/retention policies.

Agency Assistance

One of the principal duties of the State Archaeologist is to assist agencies with cultural resource management issues. During FY 2010 these duties included multiple meetings and site visits associated with DNR State Park developments and MnDOT highway projects. The State Archaeologist also assisted DNR with a revision of Shoreland Rules (Mn Rules 6120.2500 – .3900) in order to make these rules easier to implement and more consistent with standard cultural resource management processes.

OSA also assists local agencies. In FY2010, the State Archaeologist assisted Winona County with revisions of their land use ordinance as it applies to archaeological sites and cemeteries. OSA staff spend considerable time on email and telephone correspondence aiding cities and counties with development review. The State Archaeologist serves on a Dakota County Parks advisory panel.

Archaeological Research

Radiocarbon Dates File and Database – When the current State Archaeologist was the SHPO Archaeologist, he developed and maintained a database of Minnesota radiometric dates. This database is now maintained at the OSA. Along with the electronic database are

paper copies of articles and laboratory reporting sheets for radiocarbon dates (also known as ^{14}C dates) from Minnesota archaeological sites.

The database currently contains 446 dates from 129 sites. The best-dated site in the state is the Late Prehistoric Bryan site (21GD4) with 26 dates. Other sites with reported dates in double digits are: Hannaford (21KC25) with 23, McKinstry (21KC2) with 21, Smith (21KC3) with 15, Donarski (21MA33) with 12, and Mooney (21NR29) and J Squared (21RW53) both with 10. Forty-two (42) sites have only a single date. The oldest reasonably accurate date from a Minnesota archaeological site is 10,390 RCYBP $\pm$ 120 from the J Squared site (21RW53), followed by 9220 RCYBP $\pm$ 75 from Bradbury Brook (21ML42), and 9049 RCYBP $\pm$ 82 from Browns Valley (21TR5).

No radiocarbon dates were added to the database in FY 2010. It is anticipated that perhaps 30 – 40 dates will be added in FY2011 as a result of a Legacy Amendment funded initiative to better date Brainerd prehistoric ceramics.

The OSA encourages archaeologists who have obtained radiocarbon dates to submit their laboratory reporting sheets to the OSA so all researchers can share in this critical information. Laboratory sheets for radiocarbon dates should always be included in final reports when contractors or agencies obtain dates as part of the environmental review process or research-driven archaeology.

Institutional Field Research - Historically, colleges, universities, and museums have been principally responsible for archaeological research in Minnesota. This began to change in the 1970s with the rapid ascent of government-mandated cultural resource management (CRM) archaeology and increased institutional sensitivity to ethnic or politically charged aspects of archaeological work.

Currently, there are five university-based archaeological programs in Minnesota affiliated with majors in Anthropology. These are at the University of Minnesota – Minneapolis, Hamline University, Minnesota State University - Moorhead, St. Cloud State University, and Minnesota State University - Mankato. The University of Minnesota-Duluth has no full-time archaeological faculty, but occasionally offers field schools in association with Superior National Forest or private contractors. Normandale Community College also offers courses in archaeology. The University of Minnesota, St. Cloud, and Mankato offer graduate programs in archaeology, with only the University of Minnesota-Minneapolis offering a PhD track in archaeology.

In FY 2010, the following university-based field research was undertaken in Minnesota:

University of Minnesota – Minneapolis (Katherine Hayes)
- field school at Old Wadena site (21WD6)

Minnesota State University- Moorhead (Mike Michlovic and George Holley)
- field school in conjunction with Legacy-funded Swift County survey

St. Cloud State University (Deb Gold)

- field school on campus at 21SN164

Minnesota State University – Mankato (Ron Schirmer)

- field school tested several prehistoric sites in the Red Wing vicinity

Hamline University

- no Minnesota field school in 2010

University of Minnesota – Duluth (Susan Mulholland)

- field school at Hartley Park and Highland Moraine in Duluth

Normandale Community College (Sue Krook)

- field school tested several sites in Murray County

Other Research - A significant amount of archaeology is done in Minnesota each year that is not reviewed by the OSA, licensed by the OSA, or sponsored by the OSA. Most of these projects are carried out by federal agencies or otherwise reviewed by federal agencies and the SHPO under Section 106 of the National Historic Preservation Act due to federal licenses, land, or funding. The OSA occasionally receives complementary copies of reports on these projects or is asked for advice on the projects. The OSA is not aware of any major Minnesota excavations on federal land in FY 2010, although the US Army Corps of Engineers sponsored work at 21RO39 in Roseau County, and the US Fish and Wildlife Service reviewed the mitigation at the Lake Christina site (21DL46/21GR41) in Douglas and Grant counties because federal funds had been used to purchase the land. Federal funds from the Federal Highway Administration were used to help fund mitigation at site 21DK0081 in Hastings to be affected by the replacement of Highway 61 bridge.

Ed Fleming of the Science Museum of Minnesota undertook excavations at the Ranelius site (21DK4) in Dakota County in the summer of 2010 under a Legacy Grant from MHS. No report is yet available. David Mather, the SHPO archaeologist, and Jim Cummings, an archaeologist/naturalist for Kathio State Park, continued their research at the Petaga Point site (21ML11). In 2010, they excavated another 1x1 meter unit.

Public Education

Archaeology Week - The OSA has served as the major sponsor of Minnesota Archaeology Week since 1998. The first Archaeology Week was held in 1995. Major financial assistance is provided by the Minnesota Archaeological Society and the Council for Minnesota Archaeology as well as a number of state and federal agencies including the Minnesota Department of Transportation, the Minnesota Historical Society – Archaeology Department, the Minnesota Indian Affairs Council, the US Army Corps of Engineers – St. Paul District, the USDA Natural Resource Conservation Service, and the US Fish and Wildlife Service.

Minnesota Archaeology Week 2010 was held May 8-16. There were 23 officially sponsored events in 17 counties. Over 1,300 people attended the events. Some of the featured events included a tour of Blue Earth County Historical Society's archaeological collections, an Archaeology Discovery Day at the Jeffers Petroglyph site in Cottonwood County, an open house at the Olmsted County Museum, a talk on prehistoric copper tools at the University of Minnesota-Duluth, and a meeting with artifact collectors in Rice County. The annual Ft. Snelling Archaeology Fair was held at Ft. Snelling State Park sponsored by the Minnesota Historical Society, the Office of the State Archaeologist, and the Minnesota Archaeological Society. The 16th annual Elden Johnson Distinguished Lecture was presented by Dr. Leigh Syms of the Manitoba Museum at the University of Minnesota. His topic was early aboriginal agriculture in Manitoba.

The 2010 Archaeology Week poster was titled *Minnesota Archaeology: A Legacy in Sites, a Revolution in Technology* (see cover). It features a MnGEO produced map of the state showing all known site locations as well as description of several new technologies to help find and assess sites – Light Detection and Ranging (LiDAR) used to find burial mounds, side-scan sonar used to find and explore shipwrecks in Lake Superior, and laser imaging to enhance petroglyph images at the Jeffers site.

Presentations and Meetings – During FY 2010, the State Archaeologist made formal presentations at the Capitol Area Surveyors Association in Woodbury on 10/8/09, the Department of Human Services in St. Paul on 10/27/09, and the St. Paul District US Army Corps of Engineers meeting at Gull Lake on 4/21/10. The State Archaeologist attended the Lake Superior Coastal Program meeting in Duluth on 7/17/09, the Minnesota GIS-LIS Consortium Annual Meeting in Duluth on 10/21-22/09, Council for Minnesota Archaeology (CMA) meetings at Ft. Snelling on 10/24/09 and 2/20/10, the Gales of November Conference in Duluth on 11/6/09, and the Lithic Material Workshop at Ft. Snelling on 2/19-20/10.

OSA assistant Bruce Koenen was the co-organizer of the Ft. Snelling Lithic Material Workshop. Koenen attended the Gopher State Artifact Show in Owatonna on 10/4/09, the Gopher State Artifact Show in Rochester on 4/17/10, and the Pine City Knap-In on 6/25-26/10. Koenen participated in an artifact identification workshop at the Belle Plaine Historical Society on 7/11/09 and made a presentation on archaeology to the Rice County Historical Society on 5/6/10 as part of Archaeology Week.

OSA Archaeology in the Schools – Assistant to the State Archaeologist Bruce Koenen takes the lead in this initiative and has assembled a teaching kit of artifacts that he takes with him on school visits. In FY 2010 he made presentations at two public schools: Eden Lake Elementary School in Eden Prairie and Kimball Elementary in Kimball. He participated in a job shadow for a student at the International School of Minnesota. Koenen also put on four flintknapping workshops at Normandale Community College and gave St. Cloud State University Cultural Resource Management students a tour of the OSA office.

The State Archaeologist continues to serve as an Instructor in the University of Minnesota Department of Anthropology. In FY 2010, he taught one course on Advanced Heritage Management. He also serves on a number of graduate student committees both in the

Anthropology Department and the Architecture Department at the University of Minnesota. He participated in 3 thesis defenses in FY 2010, two for PhDs and one for an MA. Bruce Koenen serves on an advisory board for the Cultural Resource Management program at St. Cloud State University.

Internships – The OSA sponsors internships to not only train students of archaeology in practical skills, but to accomplish needed work within the office. In FY 2010, Ollie Anderson, a student at Minnesota State University – Mankato, was the OSA intern.

Media Exposure - The State Archaeologist typically receives a certain amount of media exposure every year not only due to the controversial nature of some of the duties, but because the public has an intensive interest in archaeology and history. Most media contacts with the State Archaeologist are either media reaction to a newsworthy situation or are generated by the media due to a perceived or real public interest. In many cases, the State Archaeologist simply provides background information, but in some cases he is interviewed and becomes part of the story.

Major media exposure for the State Archaeologist in FY2010 included a story in the *Minneapolis Star Tribune* on 7/19/09 regarding Indian burial sites, an article in *Finance and Commerce* on 7/21/09 regarding the duties of the State Archaeologist, an article in the *Fergus Falls Daily Journal* on 7/31/09 regarding burial mounds in Otter Tail County, an interview with a St. Cloud radio station on 9/2/09 regarding a burial hit by construction in Avon, and a letter to the editor of the *Star Tribune* on 1/10/10 correcting a story about dinosaurs and archaeology.

Professional Development – Due to a freeze on out-of-state travel, the State Archaeologist did not attend any professional conferences in FY 2010. Bruce Koenen attended the Midwest Archaeological Conference in Iowa City in October 2009, but paid his own expenses. Koenen attended MHS archaeological collections training on 3/24/10.

The State Archaeologist continues to serve as an editorial advisor to the *Midcontinental Journal of Archaeology*. He is a member of the National Association of State Archaeologists (NASA), the Plains Anthropology Conference, the Midwest Archaeological Conference, the Minnesota Archaeological Society, and the Society for American Archaeology.

Burial Sites Protection

A major aspect of the day-to-day work of the OSA is spent dealing with the duties assigned to the State Archaeologist by the Private Cemeteries Act (MS 307.08). These duties principally involve maintaining a file of unrecorded burial site locations, answering public and agency inquiries about known or suspected burial sites, coordination with the Minnesota Indian Affairs Council (MIAC) when Indian burials are threatened, formally determining the presence or absence of burial grounds through field work in particular areas (authentication), reviewing development plans submitted by agencies and developers, and advising landowners on management requirements of burial grounds.

Minnesota law basically treats human burials and cemeteries two ways: as Public Cemeteries under MS 306 and as Private Cemeteries under MS 307. These laws were initially passed soon after Minnesota became a state (1858), although they have been re-numbered and revised multiple times. Public cemeteries are not restrictive regarding who can be buried there and tend to be active (i.e., open to new burials). Local units of government usually own public cemeteries.

Private cemeteries are those with restricted use governed by procedures established by a private association and they exist on private property. Most private cemeteries are affiliated with religious groups. Lands containing private cemeteries are exempt from public taxes and assessments. Some well-known and well-marked private cemeteries are no longer active primarily due to church closure.

The Public Cemeteries Law includes a section on “abandoned” cemeteries (306.243) that applies to both public and private cemeteries. An abandoned cemetery is one where the cemetery association has disbanded or the cemetery is neglected and contains graves dating prior to 1875 or graves of war veterans. County boards are in charge of abandoned cemeteries if they so choose. Township boards can maintain neglected cemeteries.

In 1985, State Archaeologist Hohman-Caine and MIAC developed formal burial ground management procedures for Indian burials. These procedures were revised several times, but had not been revised after a major change in the MS 307 legislation occurred in 1993. That change involved only the addition of one word, “grounds”, in 308.07, Subd. 2, but it had major implications for authentication, management, and enforcement. It is now a felony to willfully disturb a “burial ground” not just a burial. This requires that the State Archaeologist define burial ground limits during the authentication process, that all land within those limits be properly treated, and that human remains do not have to be directly disturbed to represent a violation of the law.

In FY 2008, after careful agency consultation, the OSA issued new burial site procedures that address all recent revisions of MS 307.08, including the 2007 revisions (Anfinson 2008). The major difference between the new procedures and the ones developed by State Archaeologist Hohman-Caine in the 1980s is that the new procedures apply only to the OSA and not to other “appropriate authorities” including MIAC. This is consistent with the MS 307.08 revisions signed into law in 2007, which further separated the duties of the State Archaeologist and the MIAC and gave the MIAC the principal responsibility for managing Indian cemeteries once the State Archaeologist had authenticated them. The procedures are available on the OSA webpage.

MS 307.08 FY 2010 Activities - The OSA dealt with 29 major burial cases in FY 2010. “Major” is defined as a case where substantial OSA review is required as indicated by the need for fieldwork, extensive research, and/or official correspondence. Not all major cases result in formal authentication as defined in MS 307.08. Formal authentication involves either proving to a reasonable degree there is a burial in a particular location or proving to a reasonable degree there is not. When a burial ground or portion of a burial ground is found,

mapped, and an affiliation determined, it is considered to be “authenticated.” There is no standard term for a negative authentication finding.

The OSA typically receives several email or telephone inquiries every week relating to possible burial cases, but most of these can be dealt with quickly and without the need for fieldwork. Individually “minor” cases do not individually cause a significant expenditure of OSA time or resources, although as a whole and with the addition of the major cases, burial site protection accounts for over half the workload of the OSA.

Of the 29 major burial cases in FY 2010, 21 involved OSA fieldwork and 12 of these resulted in formal authentication (7 positive and 5 negative). Authentication involves four steps: 1) determining if the site is indeed a burial ground, 2) defining the limits of the burial ground, 3) attempting to determine ethnic identity, and 4) sending official correspondence with an authentication conclusion to the landowner as well as the zoning authority and/or county recorder. All FY 2010 major cases are discussed below. Five (5) of the cases resulted in the discovery of previously unrecorded sites. Twenty-two (22) of the sites involve Indian burials, five (5) involve non-Indian burials, and the remainder are of unknown affiliation or were not human burials.

The State Archaeologist also makes an effort to re-check known burial sites or look for reported but unthreatened burial sites when it is convenient (i.e., if they are in the vicinity of other projects being field reviewed). The known sites can be either sites that were originally recorded in the distant past or sites that have been involved with recent authentication or development projects. In FY 2010, the State Archaeologist field examined 10 sites that were not directly involved with current review projects. These sites were 21BK110, 21CR2, 21GR17, 21HE74, 21HE265, 21ME1, 21RC__ (Riceland Historic), 21SC3, 21SC94, and 21WB23. All of these sites were photo-documented.

MS 307.08 Major OSA Actions – FY 2010

21CA57 and 21CA55 – Utility Work Threat, Cass County

In April 2010, a DNR employee contacted the State Archaeologist about possible threats to a burial mound site in the Pillager area of Cass County as well as another mound site near the Mississippi River farther south. The threat related to Consolidated Telephone Company placement of new cable along the south side of Trunk Highway 210 east of Pillager and along County Road 36 to the south. OSA files indicated a burial mound group, 21CA57, was located in this vicinity of the TH 210 location and a mound/habitation site, 21CA55, along the county road to the south. Site 21CA57, a large mound group contained 65 mounds, was first mapped by T.H. Lewis in 1886. In 2005, the OSA examined the portion of this group north of TH 210 noting that the majority of mounds were probably north of TH 210. No mounds were obviously apparent north of TH 210 in 2005 as most had been plowed down or destroyed by building and highway construction. Aerial photographs suggested some mound features may survive in a cultivated field north of TH 210 as indicated by soil staining.

Site 21CA55, known as the Chippewa Agency Site, contains a multi-component habitation area, an early road, and several mounds. The site was first mapped by Jacob Brower in 1898 who noted 3 linear mounds and round mound. The site was re-mapped by Douglas Birk of MHS in 1971 in conjunction with a National Register of Historic Places nomination. Birk noted three mounds and a possible mound remnant south of Co Rd 36. The site was also re-examined by archaeologists from Leech Lake Heritage Sites in 1997 in conjunction with the reconstruction of Co Rd 36. They noted another possible mound north of Co Rd 36.

OSA staff examined the telephone project location on 5/11/10. At site 21CA57, the telephone cable work had already been completed and had been accomplished by a vibrating knife cable plow so minimal soil disturbance was apparent. Several possible mounds were noted south of TH 210, but these did not appear to be damaged by the cable work. At site 21CA55, the telephone cable had been laid north of Co Rd 36 in the vicinity of the mounds thus avoiding the Brower and Birk-mapped mounds south of the road. North of the road, OSA staff determined that the mound had been avoided by the telephone cable work.

21CP64 – Lac Qui Parle Reservoir Find, Chippewa County

OSA continued to monitor the condition of a riverbank burial in Chippewa County that was uncovered by high-water erosion in September 2007. The remains had been removed by the sheriff prior to the State Archaeologist's involvement. They were picked up in 2007 by the State Archaeologist at the Sheriff's Office in Montevideo and turned over to Hamline University for analysis. Preliminary findings do not clearly identify the ethnicity of the remains, although they are suspected to be Indian. Monitoring in FY 2009 in consultation with MIAC and Upper Sioux Dakota Reservation documented continued bank erosion threatening this burial. The entire riverbank in this vicinity may need to be stabilized, as erosion not only threatens the gravesite, but the adjacent county road as well. A re-check of the location on 8/5/2009 documented the continuing vulnerability of the site, but the only exposed bones at that time were bison. A large rock placed by the OSA the previous year in an intrusive rodent borrow in the grave was still in place. High water in the river prevented a detailed re-check on 4/16/2010. In late June 2010, Tom Ross of the Upper Sioux Dakota Reservation investigated the site at the direction of MIAC. Ross excavated and screened soil at the base of the terrace cut below the burial to recover any materials from bank slumping. The OSA will continue to monitor the situation and continue consulting with representatives of the Upper Sioux Dakota Reservation and MIAC. Removal and reburial elsewhere is perhaps the best solution.

21CW7/14 – Tree Harvesting, Crow Wing County

Mike Magner, the DNR Forestry Archaeologist, reported that private land timber harvesting may have impacted the Fort Poulak/Hay Lake mound group (21CW7/14). Although this site has two state numbers and two names, it is considered to be a single site originally containing at least 75 mounds in two adjacent groupings. Because of the possible threat and a lack of current survey information in OSA files, the State Archaeologist asked the contractor on the Legacy Amendment-funded LiDAR – Mound survey of Crow Wing County (see pages 40-41) to examine 21CW7/14 with LiDAR. The contractor complied and the LiDAR analysis

suggests that as many as 50 mounds survive. The OSA plans to field investigate this site in 2011.

Rock Lake Locality, Crow Wing County

In November 2009, Crow Wing County notified the State Archeologist that a house building permit application may involve a possible historic Ojibwe burial site on southeast side of Rock Lake in southeastern Crow Wing County. Representative of MIAC and the Mille Lacs Lake Reservation had visited the location in the summer of 2009 and had confirmed that a number of depressions (4?) were present on a small hill that was the proposed construction site. The adjacent landowner (who opposed the new construction) reported that his mother used to go wild ricing in Rock Lake with several Ojibwe women from Mille Lacs Reservation who told her that there were burials on the hill.

On 4/29/10, OSA staff met representatives of MIAC, Mille Lacs Reservation, Crow Wing County, and the landowner at the site. Grant Goltz, a soil scientist for MIAC, put a number of hand-pushed soil cores into and around the depressions. He then scanned the depressions with a metal detector getting several hits in and around the depressions. This can sometimes indicate coffin nails or metal grave goods. At the direction of the State Archaeologist, a narrow trench was excavated across one of the depressions locating two 22-shell casings, one 22-slug, and one bottle cap. The soil profile in the depression appeared to be natural as confirmed by a Crow Wing County soil scientist who was present.



OSA's Bruce Koenen excavates a trench through a feature at Rock Lake.

Based on the negative finding, the State Archaeologist suggested controlled soil removal on the hill prior to construction using a small backhoe or Bobcat, but representatives of Mille Lacs Reservation opposed this. MIAC agreed to bring back a crew within a few weeks to hand-excavate the remaining depressions. This excavation took place on 5/11/10 with OSA and MIAC staff present. Formal test units (1x1 m) were placed within the center of each depression and metal detector scans were made prior to and during the excavation. No artifacts or human bones were recovered. The soil profiles all appeared to be natural. The depressions may be tree-falls. On 5/13/10, the State Archaeologist notified Crow Wing County that a building permit could be issued for the property as the authentication was negative.

21DL1 – County Road 42 Reconstruction, Douglas County

In 1881, Theodore Lewis mapped six burial mounds west of Lake Le Homme Dieu north of Alexandria, noting that four of the mounds had been damaged by local diggers. Lloyd Wilford of the University of Minnesota visited the site in 1944, confirming illicit excavations had damaged two of the mounds (#2, #5), two mounds had been destroyed by road construction (#3, #6), one mound (#1) had been partially destroyed by road construction, and one mound (#4) was in good shape. The University's archaeological field school excavated portions of Mounds 2 and 4 in 1963. The landowner subsequently built a structure into the open excavation on the east side of Mound 4 to serve as a "museum." This structure was removed in 1980s and the trench backfilled following a request by the State Archaeologist (Hohman-Caine) and MIAC.

In 1990, Douglas County proposed to upgrade the intersection of county roads 11, 34, and 42 at the 21DL1 location. The contract archaeological firm Soils Consulting (Grant Goltz) examined the site in April of 1992, confirming the destruction of Mound 6, but finding remnants of the other five mounds in various states of preservation. The proposed road construction was not completed at this time.

In 2006, the county's engineering consulting firm (WSP and Associates) contacted the State Archaeologist about more recent plans to upgrade the county road intersection. The State Archaeologist visited the site and recommended that all new construction be confined to existing construction limits in the mound area and that no new construction be done within 20 feet from Mound 5. A subsequent EAW confirmed that these recommendations would be followed. Construction began in the spring of 2009 and was monitored multiple times in the spring and summer by the State Archaeologist with thorough photo-documentation. The project was completed in late summer 2009. As agreed, no additional disturbance of 21DL1 mounds occurred due to the construction.

21DL14 – Human Remains Uncovered, Douglas County

On 5/15/2010, the Alexandria Police department investigated a report of human remains being uncovered by a homeowner mowing his lawn. The remains were turned over to the Minnesota Bureau of Criminal Apprehension (BCA) and on 5/17/2010, an agent from the BCA gave the remains (a human mandible) to Susan Myster, a forensic anthropologist at Hamline University. Myster contact OSA and, after checking OSA records, it was clear that a burial mound group – 21DL14 – had been mapped in the immediate vicinity by T.H. Lewis in 1891. There were originally 15 mounds in the group, but an MHS archaeological survey in 1978 could only relocate three mounds (1-3) at the east end of the group in what is now a resort. The 2010 remains were found about 500 feet west of the west end of the mound site as mapped by Lewis. The State Archaeologist visited the locality on 5/20/10, but no additional human remains were apparent. No mounds are still visible at the west end of the mound group today as the area has been disturbed by housing, road construction, and railroad construction. While visiting the site, the State Archaeologist noticed that recent retaining wall construction had damaged what appears to be Mound 2 at the east end of the group. The site was photographed. Coordination is needed with the landowner and the City to prevent further

damage to the three surviving mounds. The OSA has not yet received a report from Hamline as to the probable ethnic association of the mandible.

21GD42 – County Road 1 Construction, Goodhue County

In May of 2006, an archaeologist for MnDOT contacted the State Archaeologist about a federally funded upgrade of County State Aid Highway (CSAH) 1 south of Red Wing. The project was adjacent to a known burial mound group (21GD42) that had been mapped by T.H. Lewis in 1895 and had originally contained 23 mounds. Archaeological surveys in 1995, when roadwork on CSAH 1 was first proposed, had found only one mound (Number 11) partially visible as the others had been plowed down. The State Archaeologist (Dudzick) had approved preliminary CSAH 1 plans in March of 2000 as there appeared to be no impacts to 21GD42.

New plans submitted to OSA in 2006 had some potential to impact the area of 21GD42 based on the 1995 mapping. The State Archaeologist (Anfinson) requested that Goodhue County pull construction limits in slightly to avoid areas where mounds had been mapped. Revised plans were submitted and the area was visually inspected by OSA personnel in November 2007. The OSA still recommended construction monitoring by an archaeologist to insure that no burials were hit. MnDOT decided that they would prefer to complete a pre-construction survey rather than take the chance of construction delays once started.

MnDOT hired 10,000 Lakes Archaeology (Amanda Gronhøvd, Principal Investigator) to do intensive testing in the area. In May 2008, a piece of bone, probably human, was found in a shovel test near where Mound 10 originally was located, although no obvious burial features were associated. The bone find area was outside the revised construction limits, but during a field meeting it was surprisingly apparent that Goodhue County was still using the initial plans and not the revised plans. At the field meeting, the State Archaeologist required that the revised plans be followed and that additional testing be done within the construction zone. No burial features or human remains were found by this testing. The State Archaeologist required construction monitoring, but was unable to define cemetery limits for 21GD42 as no mounds were clearly visible.

The construction on CSAH 1 began in June 2009. 10,000 Lakes Archaeology and Tom Ross of the Upper Sioux Dakota Community monitored the grading near 21GD42. The State Archaeologist also made several visits to the site during construction and examined the site on 5/29/10 following the end of construction. No burial features or human remains were apparently disturbed by the construction. The site was photo-documented.

21GD2,58/61,59,62,277,281 - Prairie Island Excel Energy CRMP, Goodhue County

In conjunction with completion of a Cultural Resource Management Plan (CRMP) by Xcel Energy for their Prairie Island Nuclear Power Plant land, the State Archaeologist was asked to examine known mound sites. On 7/14/2009, OSA staff toured the land with Xcel officials and private archaeological contractors from Mergent hired by Xcel. The sites included

21GD2, 21GD58/61, 21GD59, 21GD62, 21GD277, 21GD281, and several localities where the archaeological contractors found possible previously unrecorded mounds.

Site 21GD2, also known as the Bartron site, is primarily a Late Prehistoric habitation site, but appears to include at least one mound and a historic non-Indian cemetery. The prehistoric village was partially excavated by the University of Minnesota in 1948 (Wilford), 1968 (Johnson), and 1969 (Johnson). It was also tested by the St. Paul Science Museum in 1970 (Helmen) and by Minnesota State University - Mankato in 2008 (Schirmer). The non-Indian cemetery and mounds were mapped by the private consultant in 2008. The mound does not appear to be part of the 21GD59 group mapped by T.H. Lewis in 1885, which is farther east across a swale. A new number was assigned (21GD281) to the mound and historic cemetery, although they may have been within the boundary of the 21GD2 habitation site.

Site 21GD58/61, also known as the Birch Lake Mounds, consists of eight circular mounds originally mapped by T.H. Lewis in 1885. The University of Minnesota (Johnson) partially excavated five of the mounds in 1968. A second site number (21GD61) was assigned due to confusion with the exact location of the Lewis-mapped mounds, but it is now clear this site is the same as 21GD58. Johnson's excavations were done for Northern State Power.

Site 21GD62 was a possible mound near 21GD58/61 examined by the University of Minnesota (Streiff) in 1969. No human remains or burial pits were discovered by multiple backhoe trenches in the mound so it is possible this was not a burial mound, but a later historic feature. The excavations yielded only two small grit-tempered sherds. The backhoe trenches were not backfilled in 1969 by the University or NSP and were clearly visible at the time of the OSA visit on 7/14/09. The Prairie Island Dakota Reservation asked Xcel to backfill these trenches and, with the approval of the State Archaeologist, this was completed in June 2010 and was monitored by Mankato State archaeologist Ron Schirmer.

Site 21GD59, also known as the NSP#2 site, is immediately south of the Prairie Island Nuclear Power Plant cooling towers. The site consists of six mounds mapped by T.H. Lewis in 1885. The University of Minnesota (Johnson) partially excavated Lewis Mound 4 (UofM 1) in 1968 and Lewis Mound 5 (UofM 2) in 1969; neither mound yielded human remains. The site may have been destroyed by construction on the power plant in the late 1960s.

Site 21GD277 is a lone mound recorded during an Xcel-sponsored archaeological survey in June 2009. OSA-staff briefly examined this mound and photographed it. As stated earlier, a new number (21GD281) was assigned to the mound and historic cemetery that appears to be within the site limits of 21GD2. The mound/cemetery site is now known as the Nauer Family Cemetery.

OSA field survey on 7/14/09 examined a possible mound east of 21GD59 near an access road and a possible mound northwest of 21GD58/61. Both of these features were determined to be of recent construction.

All of the sites that were visited on 7/14/09 were photo-documented by the OSA. The OSA is assisting Xcel with the completion of their CRMP.

21HE8 – Land Sale and Proposed Development, Hennepin County

In September 1882, Theodore Lewis mapped 24 conical mounds on top of the Minnesota River bluff in Bloomington. Most of the mounds were small (25' diameter) and low (1' high), although one large mound near the bluff edge was 70' in diameter and 5' high. The next recorded visit by professional archaeologists was by Minnesota Historical Society staff in 1971 who stated on the site form "all mounds destroyed."

During the Mall of America development in the mid-1980s, MHS archaeologists again visited the site, but the mounds were outside the proposed development area so no detailed survey was undertaken. In late 2000, the landowner of 21HE8 contacted an engineering firm about the proposed sale and development of the land. The OSA got involved in July 2001 and the site was included in a City of Blooming AUAR for the area, but no detailed field surveys were done. In late 2006, United Properties, the proposed developer, contacted OSA about the site. The State Archaeologist visited the site on October 25, 2006 and took photographs. No mounds were visually apparent.

In late 2008, the landowner requested formal OSA authentication of 21HE8. After a careful examination of the site by OSA personnel, the State Archaeologist recommended that the landowner hire a private consulting firm to make a detailed field survey. The Mississippi Valley Archaeological Center (MVAC) with Connie Arzigian as Principal Investigator undertook this investigation in October and November of 2008. A final report from MVAC was submitted on 4/25/09. This report documented that surface reconnaissance and sub-surface testing in several areas had failed to find any trace of the mounds or burial features. The large mound had apparently been destroyed by early 20th century barn construction and the smaller mounds largely destroyed by a century of cultivation.

Because this site is so near the sensitive Lincoln Mounds site (21HE7) where numerous burials were hit by building construction in 2004, OSA and MIAC agreed that additional fieldwork should be done at 21HE8 by a qualified archaeologist and geomorphologist. This recommendation was made to the landowner during a meeting on 6/17/09 and he agreed.

The property owner hired Dr. Michael Kolb of Strata Morph Geoexploration to complete the additional work at 21HE8. Kolb was granted a private land authentication license signed by the State Archaeologist and Jim Jones of MIAC. Kolb did the fieldwork on 9/14-18/2009. The Kolb survey consisted of close-interval (2.5 m) 2-inch soil coring focusing on the northeastern area of the site, an area not intensively tested by the previous MVAC survey. Much of this area was in an apple orchard that had not been cultivated or disturbed to the extent of areas farther to the west and south. A total of 84 cores were extracted and carefully examined.



Strata Morph coring at 21HE8.

The State Archaeologist issued a negative burial authentication finding in a letter to the landowner on 11/19/09, but requested that prior to any intensive development, the topsoil should be carefully removed to examine the area for any surviving burials or burial pits. Copies of the letter went to MIAC and the City of Bloomington.

In a report dated 11/6/09, Kolb stated that he could find no evidence of burial mound fill or burial pits. Apparently over a century of intensive cultivation, residential construction, and farm construction activities had disturbed the mound site to the extent that intensive archaeological and geomorphological examination can find no evidence of them.



Mike Kolb examining soil cores at 21HE8.

Due to legal action not connected with the once-existing mounds and OSA authentication activities, development of this property has been delayed.

21HE27 – County Road 101 Reconstruction, Hennepin County

In January 2008, the State Archaeologist met with Hennepin County Highway personnel and URS personnel to discuss the reconstruction of County Road 101 in Minnetonka. The project includes a traffic circle to replace a dangerous curve at the location of 21HE27, a mound site initially mapped by T.H. Lewis in 1883. The mound group originally consisted of 52 mounds that were subsequently impacted by road, railroad, and residential construction. An MHS survey in 1972 noted “some” mounds remaining, but this may have been in reference to mounds further to the east that are now part of 21HE265. An MHS Trunk Highway Archaeology crew plotted the Lewis locations of the mounds on a modern map of the area in 1986 when the current county road was Trunk Highway 101, but they did not complete a

detailed field survey. In August 2000, OSA staff monitored widening of TH 101, but did not find any human remains and did not examine the site as a whole.

In April 2008, OSA personnel examined the area of the proposed county highway construction, but could see no obvious remnants of mounds in the area. Soils probes were inconclusive as to the survival of mound fill or burial pits. The OSA recommended that a private archaeological contractor be hired to complete intensive testing in the proposed construction limits. The first phase of this testing was carried out in June and July 2008 by the Mississippi Valley Archaeological Center (Connie Arzigian, principal investigator); this testing involved shovel tests, trenching, and 1x1 m units. The final report was completed on 5/25/09. The testing did not find any definitive prehistoric features or artifacts, but suggested that a few areas still contain intact soil horizons. The State Archaeologist recommended additional testing of the areas with the most potential prior to construction.

In May 2010, MIAC hired soil scientist Grant Goltz to undertake hand-pushed soil coring of the development area. The OSA did not issue an authentication license for this work as it involved only minor soil disturbance. (Mr. Goltz is not a *qualified archaeologist* under state law, although he is very familiar with mound investigations.) The Goltz work was not coordinated with OSA. Goltz completed a report of his work in early June 2010. Hennepin County provided the State Archaeologist with a copy of the report. Goltz concluded that mound remnants still existed in the Area of Potential Effect (APE), but OSA review of the report indicated Goltz's mound reconstruction map was 50' off due to use of a poor quality photocopy of the Lewis notes. In a meeting with Hennepin County on 6/17/09, the State Archaeologist recommended that Hennepin County obtain another opinion by a qualified geoarchaeologist. Hennepin County agreed to do this in FY 2011.

21IC4? - Lake Winnibigoshish Find, Cass and Itasca Counties

In April 2010, a fisherman found a human femur on a sandbar in the Mississippi River below the Lake Winnibigoshish Dam. The femur was given to Leech Lake Heritage Sites who reported the find to the State Archaeologist on 4/20/10. The femur was given to MIAC and taken to Hamline University for analysis and ethnic identification. No report has been sent to OSA as of yet, but it is assumed the femur is Indian as there is a nearby mound group (21IC4) that has been partially eroded by high water.

21MA74 – Construction Burial Disturbance in Warren, Marshall County

On 8/18/09, an agent with the BCA in Bemidji called the State Archaeologist to report human remains being encountered by a residential development on the north side of Warren. An almost complete skeleton had been exposed, as well as recent historic artifacts. Jim Jones visited the location and it was agreed to allow removal of the skeleton for forensic examination. The remains were removed and sent to Dr. Phoebe Stubblefield at the University of North Dakota. After a brief analysis, Dr. Stubblefield provided the State Archaeologist with a verbal report stating that it was an adult of about 40 years of age and possibly of Indian origin. MIAC has been dealing with this case, but has provided the State Archaeologist with no documentation to date.

Angell/Bennington Cemetery – Possible Farming Disturbance, Mower County

In July of 2006, the State Archaeologist received a call from a person in the Waseca County Planning and Zoning Office reporting that a friend in Mower County was concerned about a small private cemetery in Bennington Township. She reported that 15-20 years ago a farmer had removed some headstones that were in his field and moved them to the edge of the field so he could plow the cemetery area. A literature search indicated this cemetery had originally been associated with the Angell family, but was later called the Bennington Cemetery. It is unknown if it was ever officially recorded. Because the damage had been done almost 20 years ago, this review was given low priority for the OSA.

On 7/23/09, the State Archaeologist visited the location noting a small patch of brushy



Headstones in brush at the Angell Cemetery.

vegetation near the north end of a soybean field. Upon investigation of the brush, a number of headstones were found stacked there. They were photographed. On 12/7/09, a descendent of the Angell family who now lives in Springfield, Oregon called the State Archaeologist about this cemetery. He was asked if the cemetery had ever been recorded in order to determine if the County (*Recorded*, but *Abandoned*) or the State Archaeologist (*Unrecorded*) had jurisdiction. He has not yet provided the OSA with additional information.

21MU51 – Lake Shetek Campground Construction, Murray County

In November 2009, the DNR State Parks archaeologist requested a State Archaeologist authentication of a possible mound in Lake Shetek State Park in an area to be affected by proposed campground expansion. The feature was within site 21MU51, a prehistoric habitation site that had been first mapped in 1995 and subjected to intensive testing to evaluate its importance in 2009. Based on the 2009 testing, the site was determined to be not eligible for the National Register of



OSA's Bruce Koenen excavates trench in feature at 21MU51 watched by DNR Lake Shetek SP manager.

Historic Places, although limited soil probing by OSA's Bruce Koenen that same year proved insufficient for assessing the origin of the mound feature.

On 6/15/10, OSA staff returned to the site to make a final authentication determination. A 6-meter long trench was open from the north edge of the feature to the center. Because there was no significant difference in the soil profile from outside the edge of the feature into the center, the feature appeared to be natural. The trench was left unfilled and was subsequently examined by NRCS soil scientist Joe Kristoff who concurred that the feature was natural. A negative authentication was issued by the State Archaeologist on 7/12/10 and construction on the campground was allowed to proceed.

21OT8 – Utility Work, Otter Tail County

A call from the public suggested that utility work may impact a burial mound group in the vicinity of West Battle Lake in Otter Tail County. Site 21OT8 was mapped by T. H. Lewis in September 1886; Lewis mapped 42 mounds at the site. The State Archaeologist made a field visit to the site on 9/18/09. The entire site area was walked and photo-documented. The site is now bisected by Co Rd 5, separating mounds 1-30 and mounds 41-42 on the south from mounds 31-40 on the north. Much of the site has been cultivated in the past, which has rendered most of the mounds no longer surficially visible. The area of mounds 1-23 is now in tall-grass prairie and none of these mounds is clearly visible. Mounds 24-27 on wooded, narrow ridge near a field road and are the most visible mounds of the group. The area of mounds 41-42 are in grassy area, but are not visible. Across Co Rd 5, the area of mounds 28-34 is in sumac and poison ivy where only mound 34 is faintly visible. The small hill to the south that contained mounds 36-39 appears to have been graded during road construction many years ago. No utility work threats to the site were apparent.

21OT13 – Trail Construction, Otter Tail County

In November 1883, T.H. Lewis mapped 63 mounds on the east side of Otter Tail Lake as well as noting that additional mounds in the area were no longer visible. In 1986, the OSA (Hohman-Caine) reviewed a residential development within the southern portion of the mound group in the area of Mounds 21-51. The development was allowed to proceed as long as there was no ground disturbance within 50 feet of any individual mound. The mounds and setbacks were added to the plat.

Since 1986, there have been multiple developments within the limits of 21OT13 including road construction on the two trunk highways, utility development, and resort development. In September 2005, the City of Ottertail contacted the Acting State Archaeologist (Anfinson) to report the possible disturbance of a mound in the residential development investigated by the OSA in 1986. Jim Jones of MIAC visited the location and reported the landowner was staying at least 50 feet away from the mound on his property. In July 2008, the State Archaeologist visited the site to update the photo-documentation.

In July 2009, the City of Ottertail contacted the State Archaeologist about the possible relocation of the city's otter statue to the north side of Trunk Highway within the site limits

of 21OT13. A mound (18) was still visible on the north side of the highway. In addition, Lewis had noted “Chippewa Graves” in the same vicinity. Pin flags were put in place by the State Archaeologist outlining the mound. On 7/13/09, the State Archaeologist informed the city they should find another location for the otter statue.

At about the same time, the city was proposing a trail along the north side of Trunk Highway 8. The mayor of the City of Ottertail contacted the State Archaeologist on 7/28/09 about the trail and he was informed about the complications. MnDOT is now involved in the trail planning and will coordinate this with the State Archaeologist in FY 2011.

Ole Anderson Grave – Relative Request, Otter Tail County

In March 2009, the State Archaeologist received a request from a person living in Boston to check the condition of a relative’s grave site in Otter Tail County near Rothsay. According to the informant, lilac bushes had been removed from grave site, which is at an abandoned farmstead. The State Archaeologist visited the location on 7/31/09. Most of the area was in wheat and the grave site appeared to be in a wheat field just east of some grain bins. Because of the vegetation, it was impossible to see any visual features that would suggest a grave was present. Additional research may be necessary prior to any additional fieldwork. There are no immediate threats to the grave itself beyond continued cultivation.

Big Pine Lake Burial – Otter Tail County

In late August 2009, the State Archaeologist received a call from the Otter Tail County sheriff’s department regarding the discovery of a human skull during utility work near the south end of Big Pine Lake. The Minnesota Bureau of Criminal Apprehension (BCA) had been called in and they had transferred the remains to Dr. Susan Myster, a forensic anthropologist at Hamline University. Myster also contacted the State Archaeologist and the Minnesota Indian Affairs Council (MIAC). Myster determined the skull was indeed very old and was probably Indian, but at one time it had been glued together with a modern adhesive. During the investigation, a local resident of Big Pine Lake came forward to admit that he had buried the skull a number of years ago after he found it among his deceased father’s possessions. Apparently his father had found it in a gravel pit in the Tenney area (Wilkin County) many years ago and used to have it on display in a bar he owned in Tenney. The skull was turned over to MIAC for reburial.

21PL4 – USDA Project, Polk County

In May 2009, a representative of the USDA-RD called the State Archaeologist about a project in Polk County near some possible burial mounds. The landowner had reported the mounds to USDA-RD. Although the mounds did not appear to be directly threatened by the project, they were in danger of being undercut by the Sand Hill River. A check of the OSA files revealed that the possible mounds were in the vicinity of 21PL4, a lone mound mapped by T.H. Lewis in 1886 and also in the vicinity of four possible mounds reported to the State Archaeologist (Hohman-Caine) by a DNR employee in 1979. The four mounds had been



Mound-like feature on the Sand Hill River.

assigned a temporary number of PL-FS11, although a visit to the location by the State Archaeologist in 1979 suggested some of the features may be natural.

Pat McLoughlin, an archaeologist for NRCS, made a field inspection of the project area in late March 2010.

McLoughlin sent photographs of the features to OSA. The features do resemble large burial mounds and they are indeed threatened by natural cutting of the Sand Hill River. OSA will attempt to examine these mounds when convenient and perhaps soil core them to help assess their origin.

21RA1 – Construction Clearance, Ramsey County

In April 2009, an engineering consultant contacted the State Archaeologist about the construction of a proposed sewer line and lift station near a burial mounds site (21RA1) on Lower Afton Road in St. Paul. Theodore Lewis originally mapped 21RA1 in 1882 and recorded two mounds. MHS archaeologists in 1975 noted that two mounds were still visible in the vicinity. In 1980, Les Peterson, the Trunk Highway Archaeologist, reviewed MnDOT plans to upgrade TH 61 near the mounds and noted that the mounds would not be affected. In 1991, Peterson reviewed MnDOT plans to upgrade a nearby TH 61 intersection and, although the two mounds visible along TH 61 would not be affected, Peterson noted that the mounds' location, sizes, shapes, and distance between them did not fit the Lewis description.

On 4/7/09 the State Archaeologist met the construction supervisor at the site. Both mounds were relocated, although Mound 1 appeared to be much larger than the Lewis notes suggest. The area around the mounds appears to have been extensively graded sometime in the past. There is a good chance that both mounds have been impacted by past disturbances and that the two existing mounds are all or partially recent fill or may not be burial mounds at all, but no coring of the mounds was attempted. As a precaution, lathe stakes were placed every 25' in a 50' diameter around both mounds' exteriors so construction could safely avoid impacting them. The area was digitally photographed.

In May 2010, the State Archaeologist was contacted by a private consultant working on a proposed MnDOT Park and Ride facility in the same vicinity. The information from the 2009 OSA authentication work was forwarded to the consultant and they were asked to follow the same setback requirements.

21RA5 – Proposed Stairway Construction, Ramsey County

In January 2010, an archaeologist with MnDOT contacted the State Archaeologist concerning a proposed stairway and trail to be constructed from Mounds Boulevard to the Bruce Vento Nature Sanctuary in St. Paul. This project was in the vicinity of 21RA5, a group of 19 mounds mapped by T.H. Lewis in 1881. A records review determined that Lewis mounds 13 – 17 appeared to be within the Area of Potential Effect (APE) of the project, although none of the mounds in the group appear to be still visible. In 1994, soil scientist Grant Goltz assisted by archaeologist Les Peterson undertook soil coring of the area in conjunction with a proposed upgrade of Mounds Boulevard. Although much of the area was covered with a parking lot, the Goltz and Peterson survey suggested mounds 8-13 and 15 were destroyed, but possible mound fill remained for Mound 14. OSA staff monitored the road construction in 1994 with negative results. In conjunction with the 2010 proposal, the State Archaeologist recommended proceeding with care and avoiding Mound 14. MnDOT proposed to avoid all excavation and place the trail on fill in this vicinity. The project is currently on hold.

Mountain Iron Cemetery – Restoration Work, St. Louis County

In June 2009, a representative of the Mountain Iron Historic Preservation Group contacted the State Archaeologist about their plan to do restoration work and clean-up in a historic cemetery in Mountain Iron. The project involved a non-Indian unrecorded cemetery on state land thus State Archaeologist approval was needed. The cemetery had been abandoned in the early 20th century and woods and brush had invaded the area. The State Archaeologist, after coordination with the DNR land manager, gave his approval for the restoration project in a letter dated 8/4/09. The State Archaeologist plans to visit the location in 2011.

21SL799, 800, 801 – Public Safety Building, St. Louis County

A citizen of Duluth informed the State Archaeologist in August 2006 of possible impacts to three late 19th century cemeteries by development of a new St. Louis County Public Safety Building in Duluth. In 1991, the OSA (Hohman-Caine) had determined there might be as many 700 unmarked graves in the three sites associated with the St. Louis County Hospital and the Cook Nursing Home (1891- 1947), but only limited field research has been done to relocate any graves. The State Archaeologist (Anfinson) visited the locations on 11/4/06 and determined that the proposed public safety building should not impact any of three suspected burial grounds.

In August 2009, an official with the City of Duluth provided the State Archaeologist with plans for the proposed police facility. The cemeteries actually appeared on the planning maps. The State Archaeologist replied by email on 8/19/09 that the proposed construction would not impact the cemeteries. Additional literature research and detailed field mapping assisted by remote sensing of these cemeteries would be desirable, but no funding is currently available.

21SC24 – Electric Line Relocation, Scott County

In September 2009, an official with Three Rivers Park District contacted the State Archaeologist about plans to replace a damaged electric line feeding The Landing Park north of Trunk Highway 101 in Shakopee. This proposed route would pass through the original mapped limits of a mound group (21SC24). Theodore Lewis mapped this mound group in 1882, recording 111 mounds. In 1940, the Department of Highways constructed TH 101 through the southern portion of the mound group destroying numerous mounds, although the University of Minnesota salvaged a few prior to destruction. In 1965, TH 101 was again upgraded and the University returned to the site to conduct salvage excavations on 17 mounds.

In 1967, work began on the Minnesota Valley Restoration Project that was later known as Murphy's Landing and is now known as The Landing. All of the surviving mounds were incorporated into the park area. Various projects on TH 101 and in The Landing over the next 40 years resulted in various archaeological surveys by the Trunk Highway program and private consultants. Some of these surveys have attempted to re-map the surviving mounds, although there are discrepancies between the maps.

In conjunction with a proposed trail, the State Archaeologist examined the location on 5/20/09 noting a number of surviving mounds within The Landing. He digitally photographed the entire mound area. The State Archaeologist then met with representatives of Scott County, Three Rivers Park District, the Shakopee Dakota, MIAC, and the Minnesota SHPO. It was determined the proposed trail would not impact any surviving mounds or intact burial areas.

With regard to the power line relocation, the State Archaeologist suggested that a detailed map be made of the surviving 21SC24 mounds in order to determine if any mound locations would be impacted. The field survey to do this mapping was done by OSA staff and GIS staff from Three Rivers Park District on 9/12/09. While a number of mounds in the park are still visible and can be used as benchmark mounds with regard to the original T. H. Lewis survey, discrepancies on the Lewis map such as changes in magnetic declination make it difficult to exactly relocate all former mound locations. However, enough information was obtained from the detailed mapping to find an area that had been previously disturbed by sewer work to define an appropriate corridor for the new power line. Three Rivers hired an archaeologist (Steven Blondo) to confirm that the new route had been previously disturbed. This work was completed in June 2010 and indeed confirmed that the agreed upon power line route would not impact any surviving mound features. The work was coordinated with MIAC and the Shakopee Dakota Reservation.

21SN167 – Burial Disturbance in Avon, Stearns County

In the morning of 8/21/09, the Deputy Medical Examiner for Stearns County called the State Archaeologist to report the discovery of human remains the previous day at a construction site in Avon. The State Archaeologist immediately notified Jim Jones of MIAC and agreed to meet him at the construction site that afternoon. Prior to our arrival, the Medical Examiner had authorized the removal of the exposed bones so they could be examined by Dr. Deborah



State Archaeologist Scott Anfinson examines burial pit in Avon.

Gold, a physical anthropologist at St. Cloud State University. Upon arrival at the site, Jones and the State Archaeologist met with representatives of the construction company, the property owner, the Avon police department, and Stearns County law enforcement. The burial pit was exposed in the northwest corner of the construction site. Trowelling and screening by the State Archaeologist failed to find any artifacts or any additional bone. As the location was outside of the proposed building footprint, OSA and MIAC requested that the grave location be avoided by additional

construction, that it not be used as the proposed refuse enclosure as shown on the plan, and that it be backfilled, sodded, and left unmarked. MIAC expected to rebury the remains at the same location. In a report dated 8/25/09, Dr. Gold confirmed that the remains were clearly over 50 years of age and were most likely of Indian origin. They appeared to be from a single adult female. A number of representatives of the local media interviewed the State Archaeologist about the Avon burial.

21WA9 – Mound Site Authentication on Grey Cloud Island, Washington County

In June 2009, a representative of Aggregate Industries contacted the State Archaeologist about a mound site on their property on Lower Grey Cloud Island. Aggregate Industries was informed of the site by contract archaeologists (10,000 Lakes) working on an adjacent parcel in 2008. The site in question is 21WA9, a group of 48 mounds mapped by T.H. Lewis in November 1882 and May 1887. In 1971, Douglas Birk of the Minnesota Historical Society made a detailed map of the mound group noting that at least 14 mounds were no longer visible; most of these non-visible



OSA assistant Bruce Koenen takes GPS readings at 21WA9.

mounds were along the northern edge of the mound group in the central and western portions of the site. They had been impacted by cultivation.

After meeting with representatives of Aggregate Industries, the company made a formal burial authentication request under MS 307.08. OSA staff completed fieldwork at the site on 7/29/09 assisted by mapping staff from Aggregate Industries. The basic condition of the mounds had not changed since 1971, although former grassy fields were now covered with woody vegetation. Benchmark mounds were relocated at both ends of the mound group and along its northern and southern edges. Twenty-foot buffers were staked beyond the perimeter mounds and then these buffers were connected on a map to form the official boundary of the burial ground. This boundary was demarcated in the field by metal fence stakes at each angle turned on the map. The State Archaeologist informed Aggregate Industries by letter on 8/18/09 concerning the official establishment of this boundary and that any disturbance within this boundary had to be approved by the Minnesota Indian Affairs Council.

21WN45 – Rock Quarry and Mobile Home Development, Winona County

In November 2009, the Winona County Planning Department contacted the State Archaeologist about possible impacts to a historic non-Indian cemetery east of Elba. OSA records indicated the site in question is known as the Domke or Frank Burial (21WN45). This site had first been archaeologically recorded in 1980 by Les Peterson of the Minnesota Historical Society following the accidental exposure of a human skull during borrow pit operations. The property in question was owned by a family named Frank, but the skull appeared to be associated with a former Catholic church known as the Domke Church. Correspondence in 1980 from the State Archaeologist (Hohman-Caine) and a forensic anthropologist (Barb O'Connell) indicated some possibility that the skull was not from the Catholic cemetery and was an isolated Indian burial.

Correspondence with Winona County officials indicated that the Domke Church cemetery had never been officially recorded, although it appears to be well marked with headstones and a stone perimeter fence. The State Archaeologist recommended that an archaeologist be hired to determine if any burials were outside the fence if the immediately adjacent area was to be developed. It is not known if the survey or the development were completed. The State Archaeologist will make a field examination of the location in 2011.

21WR16 – Buffalo-Montrose Trail/County Road 12 Upgrade, Wright County

In December 2006, an HDR archaeologist working under contract for the Wright County Highway Department asked the OSA for recommendations as to the potential effects of a trail project on mound group 21WR16. The site contained 20 mounds when mapped by Theodore Lewis in 1886. On 4/18/07, OSA personnel visited the location. No clearly visible mounds remained and it is likely that original construction of County Road 12 destroyed most of the mounds.

There was some possibility that burial pits may survive on the east side of the county highway. As the trail was planned for the west side of highway, the State Archaeologist

informed the consultant that there was little chance for encountering burials by the trail construction and no formal archaeological monitoring of the construction was necessary. The State Archaeologist did request that the construction crews be notified as to the possibility of encountering human remains in the 21WR16 vicinity and to immediately cease work if any bones were encountered during construction. MnDOT confirmed these recommendations in a letter from archaeologist Craig Johnson to Wright County on May 7, 2007.

In March 2009, Wright County officials informed the State Archaeologist they planned to upgrade CSAH 12 adjacent to 21WR16. Preliminary plans showed a slight alignment shift to the east. On 9/4/09, the State Archaeologist met representatives of the Wright County Highway department at the site. Because there was a chance that mound remnants still existed near the edge of the current construction limits on the east side of the highway, Wright County was asked not to do any construction east of the existing limits unless they hired a qualified burial authentication archaeologist to thoroughly test the area. No additional correspondence has been received from Wright County on this matter. The State Archaeologist will field examine the location in 2011.

21WR17 – Gravel Pit Expansion, Wright County

In May 2009, a planner for Wright County contacted the State Archaeologist concerning a gravel mining expansion south of Buffalo. The county was aware of burial mounds in this vicinity due to earlier coordination with the State Archaeologist on the Co Rd 12 project (see above). The site in question is 21WR17, a mound group originally containing 20 mounds as mapped by T.H. Lewis in 1886. The State Archaeologist field checked the location on 5/14/10. An existing gravel pit has destroyed most of the mounds in this group with only the northern edge of the mound group still surviving. The largest mound in the group (Lewis Mound 1) is still largely intact on the northwest edge of the gravel pit. Several smaller mounds (18-23) may also survive in the northeast portion of the group. All of the surviving mounds are at the edge of the existing gravel pit. The county was told to avoid permitting any additional encroachments on the north side of the pit.

Chapter 3: Minnesota Archaeology in 2010

In the 2006, 2007, 2008, and 2009 OSA Annual Reports, the State Archaeologist discussed in detail the status of Minnesota archaeology highlighting some recent improvements and current problems and suggesting courses of action that could improve Minnesota archaeology. The FY 2010 status of archaeology in Minnesota has not changed greatly with regard to the numbers of archaeologists working in the state, the programs at the State Universities, laws, and cultural resource management activities. However, funding through the 2008 Legacy Amendment has major positive implications for Minnesota archaeology and this funding began to be used in FY 2010.

Statewide Survey of Historical and Archaeological Sites

In November 2008, the voters of Minnesota approved a constitutional amendment that increased the state sales tax by three-eighths of one percent for 25 years with the revenue dedicated to four funds whose primary purpose is to preserve the natural and cultural legacy of the state. The amendment is commonly referred to as the Legacy Amendment. One of the four funds is the *Arts and Cultural Heritage Fund*, which receives 19.75% of this sales tax revenue and is dedicated to the preservation of the state's arts and cultural heritage. Following intensive lobbying by the State Archaeologist, in May 2009 the Minnesota Legislature allocated \$500,000 from the biennial budget of 2010 - 2011 Arts and Cultural Heritage Fund for a *Statewide Survey of Historical and Archaeological Sites*. This survey was to be accomplished by competitive bid contracts to conduct a statewide survey of Minnesota's sites of historical, archaeological, and cultural significance. The law specified that the Office of the State Archaeologist, the Minnesota Historical Society, and the Minnesota Indian Affairs Council each appoint a representative to an Oversight Board that would select contractors and direct the conduct of the survey. The funds were allocated to the Minnesota Historical Society for contracting purposes.

The Minnesota Historical Society appointed the head of their Archaeology Department, Patricia Emerson, to the Oversight Board. The other two members were Scott Anfinson, the State Archaeologist, and Jim Jones from Minnesota Indian Affairs. At their initial meeting, the Oversight Board determined that archaeological resources rather than standing structures should receive the principal survey emphasis because archaeological resources are much less well known, are largely invisible on the surface, and are not taken into account by most local planning agencies thus they are more vulnerable. Furthermore, substantial separate funding from the Arts and Cultural Heritage Fund had been provided to the MHS for grants that realistically would be focused on non-archaeological aspects of the state's cultural heritage because most grants would go to local historical societies unfamiliar with archaeological needs. The Board also determined that the general survey strategy to be employed should: 1) examine poorly known areas of the state, 2) examine poorly known statewide historic contexts, and 3) undertake projects that would assist both state and local agencies with protecting and managing cultural resources.

The Statewide Survey of Historical and Archaeological Sites was conceived by the State Archaeologist following passage of the Legacy Amendment. The State Archaeologist's

initial proposal to the Legislature asked for one million dollars to be granted to the OSA's parent agency, the Department of Administration. The Legislature reduced the amount to \$500,000 and funneled the funds through MHS, but the survey remained a line-item appropriation and was given independence of action through the use of the Oversight Board rather than an MHS grant committee. Following consultation with the Minnesota Department of Transportation (MnDOT), the Minnesota Department of Natural Resources (DNR), the Council for Minnesota Archaeology (CMA), and the general public at an open meeting at Ft. Snelling on 9/9/09, the State Archaeologist wrote a series of draft Requests for Proposals (RFPs). Consultation with MnDOT and DNR continued as specified in the legislation.

A total of eight competitive bid contracts were implemented to address the strategy adopted by the Oversight Board. These contracts are titled: *Survey to Assess the Status of Burial Mound Sites in Scott and Crow Wing Counties*, *Survey to Identify and Evaluate Indian Sacred Sites and Traditional Cultural Properties in the Twin Cities Metropolitan Area*, *An Archaeological Survey of Swift County*, *An Archaeological Survey of Olmsted County*, *An Archaeological Survey of the Lake Superior Region*, *A Survey to Find Minnesota's Earliest Archaeological Sites*, *Investigating Unrecorded Historic Cemeteries in Minnesota*, and *The Age of Brainerd Ceramics*. The first three contracts were completed by the end of December 2010 and the other five are underway with completion set for June 2011.

Each of these contracts is briefly described below and final reports for the three completed contracts can be found on the State Archaeologist's webpage. Exact locational information for sites has been removed from the on-line reports in order to protect landowner's rights, reduce site vandalism, and comply with state law regarding security data. Exact site locational information will be given to appropriate state and local agencies for planning and management purposes. This information is also available to site landowners.

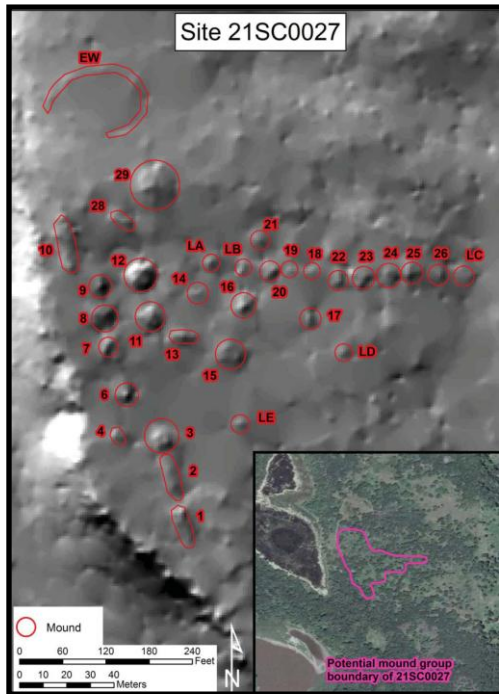
Survey to Assess the Status of Burial Mound Sites in Scott and Crow Wing Counties

Purpose: The purpose of this project was to determine the current status of prehistoric burial mounds in two sample counties in order to assist the State Archaeologist with burial mound authentication, assess the usefulness of LiDAR, and to better inform landowners and agencies of their obligations under the Private Cemeteries Act (Minnesota Statutes 307). The project sought to utilize new technologies such as Light Detection and Ranging (LiDAR), geographic information systems (GIS), and geographic positioning systems (GPS) for more efficiently and accurately mapping and recording earthworks.

Contractor: University of Iowa - Office of the State Archaeologist (Joe Artz)

Results:

- provided site-by-site information comparing LiDAR and field survey results to the early maps



- LiDAR analysis detected 285 Precontact earthworks at 37 sites in the two counties
- demonstrated the use of LiDAR as a cost-effective means of initially scanning a landscape for mounds with the right LiDAR data sets and the right expertise
- analyzed critical issues needed for accurate mound plotting using LiDAR

Recommendations:

- demonstrated the need for LiDAR data to meet or exceed the U.S. Geological Survey National Geospatial Program's LiDAR Guidelines and Base Specification as being required by the current Legacy funded survey

LiDAR map of mound site in Scott County.

Survey to Identify and Evaluate Indian Sacred Sites and Traditional Cultural Properties in the Twin Cities Metropolitan Area

Purpose: The primary goal of this project was to create a process through which a state inventory of American Indian sacred places and important traditional use sites could be completed to insure that such sites are adequately considered in environmental review procedures and, when possible, protected from harm.

Contractor: St. Cloud State University (Kelly Branham)

Results:

- interviewed Dakota Elders and cultural knowledge keepers from Dakota communities
- interviewed archaeologists and cultural anthropologists who are invested in preservation of TCPs and sacred sites
- analyzed forms and processes that are used to identify and preserve native traditional use sites and sacred places in other states
- recognized current communities' relationships with sacred places is not merely a historical relationship, but what currently defines a place as being important

Recommendations:

- need for a phased process, which emphasizes meaningful and thorough consultation with multiple communities
- expansion of the project to include Ojibwe communities and sacred sites

An Archaeological Survey of Swift County

Purpose: To review the archaeological resources of Swift County through examination of existing collections and known sites, and, most importantly, to conduct a field survey to document additional archaeological sites in the county. At the beginning of the survey, only 15 archaeological sites were recorded in Swift County.

Contractor: Minnesota State University – Moorhead (Mike Michlovic and George Holley)

Results:

- surveyed 1,900 acres of land, re-examined all known sites, and located 45 previously unrecorded archaeological sites
- examined all known major artifact collections
- will make multiple public presentations during the winter and spring of 2011



MSU archaeologists Mike Michlovic and George Holley during Swift County island survey.

Recommendations:

- most prehistoric sites are on the larger stream channels and larger lakes
- sites are mostly lithic scatters and only a few sites in select locations contain pottery
- many of the cultural material scatters are small in size and contain relatively few artifacts
- Swift County was not intensively used in prehistoric times, although there may have been a resident population at times
- long lasting Indian use of the county from 12,000 years ago through historic times
- existing locational models appear generally adequate for site prediction
- future work should now focus on the recovery of larger samples of cultural material for the purpose of more completely modeling the prehistoric culture history of Minnesota

An Archaeological Survey of Olmsted County

Purpose: To review the archaeological resources of Olmsted County through examination of existing collections and known sites, and, most importantly, to conduct a field survey to document additional archaeological sites in the county. At the beginning of the survey, only 38 archaeological sites were recorded in Olmsted County.

Contractor: Mississippi Valley Archaeological Center (Connie Arzigian)

Results to Date:

- has plotted all of the areas previously archaeologically surveyed in Olmsted county
- surveyed over 400 acres in southeastern and western portions of the county
- field surveyed and completed site update forms for all previously reported sites
- made multiple visits to the Olmsted County History Center to examine and photograph all Native American prehistoric artifacts
- worked with local artifact collectors to document their collections

Recommendations: to be submitted in June 2011

An Archaeological Survey of the Lake Superior Region

Purpose: To review the archaeological resources of Minnesota's Lake Superior Region through examination of existing collections and known sites, and, most importantly, to conduct a field survey to document additional archaeological sites in the county. At the beginning of the survey, only 34 archaeological sites have been recorded in this region.

Contractor: Duluth Archaeological Center (Sue and Steve Mulholland)

Results:

- compiled GIS layers to identify areas with high potential for archaeological sites, focusing on areas with less than 7 degrees of slope, less than 100 meters from surface water plus land ownership, transportation routes, geomorphology, USGS topographic maps, and glacial lake shoreline features
- about 30 1-5 acre parcels have been surveyed, mostly on DNR and City of Duluth lands
- artifact collections were reviewed at the Historical Societies of Cook, Lake, St. Louis, and Carlton Counties
- interviews with members of the Northern Lakes Archaeological Society provided information on approximately two dozen sites in the Two Harbors area

Recommendations: to be submitted in June 2011

A Survey to Find Minnesota's Earliest Archaeological Sites

Purpose: The purpose of the project is to determine if sites dating prior to 10,000 BC can be found in Minnesota through a comprehensive analysis of environmental and archaeological records followed by intensive field survey of one or more high potential areas.

Contractor: Augustana College Archaeological Laboratory (Adrien Hannus)

Results: project has just begun

Recommendations: to be submitted in June 2011

Investigating Unrecorded Historic Cemeteries in Minnesota

Purpose: The purposes of the project are to summarize what is known about unrecorded historic cemeteries, to update the State Archaeologist's site file with regard to such cemeteries, and to conduct limited field work to determine the status of unrecorded cemeteries in three selected counties.

Contractor: Two Pines Resource Group (Michelle Terrell and Andrea Vermeer)

Results: project has just begun

Recommendations: to be submitted in June 2011

The Age of Brainerd Ceramics

Purpose: The purposes of this project are to determine if Brainerd ceramics appear as early and survive as late as some researchers have proposed (1500 BC – AD 700), if contamination with old carbon plays a significant role in dates on food residues from Minnesota prehistoric ceramics, and if the contamination is dependent on region of origin of the ceramics, the natural food sources of the charred material, or pre-treatment methods.

Contractor: Soils Consulting (Christy Hohman-Caine and Leigh Syms)

Results: project has just begun

Recommendations: to be submitted in June 2011

Current Status of Minnesota Archaeology

Archaeologists

There are currently perhaps 100 archaeologists living and working in Minnesota. More than 60 of these archaeologists have advanced degrees and practice archaeology full-time in the state. Over 50 of the advanced degree archaeologists work in cultural resource management (CRM) with 12 at Federal agencies, 11 at State agencies, 3 at Indian reservations (Bois Forte, Leech Lake), and about 30 at private contracting firms based in Minnesota. A number of out-of-state contracting firms also occasionally do archaeological work in Minnesota. Advanced degree archaeologists generally meet federal and state standards required to be a principal investigator on a public archaeological project and to obtain a state license.

There are perhaps an equal number of Bachelor's Degree-level archaeologists living in Minnesota who work on CRM field crews and do much of the analysis and record keeping for CRM contracting firms and agencies. Some of these jobs are seasonal.

There are 10 full-time academic archaeologists in Minnesota who have advanced degrees and practice North American Archaeology. The University of Minnesota – Minneapolis has six full-time staff archaeologists in the Anthropology Department, but only one specializes in North American archaeology (Katherine Hayes). There are three North American archaeologists at Minnesota State University - Moorhead (Mike Michlovic, George Holley, Rinita Dalan), two at St. Cloud State (Mark Muniz, Debra Gold), two at Hamline University (Skip Messenger, Brian Hoffman), and one at Minnesota State – Mankato (Ron Schirmer). There is also one North American archaeologist at the Science Museum of Minnesota (Ed Fleming), although his duties are primarily curatorial. Several recent graduates of advanced degree archaeology programs also reside in the state and do not have full-time employment as archaeologists, although they have intermittent teaching and contract archaeology jobs.

Post-secondary Archaeological Education

The University of Minnesota Department of Anthropology hired a tenure-track North American historical archaeologist, Katherine Hayes, in 2009. She replaces an existing North American prehistoric archaeologist (Guy Gibbon) who retired from full-time work in 2009, although Gibbon will continue to teach at least one class (Minnesota Archaeology) and do research. The Department fulfilled its commitment to once again offer *local* summer field schools in archaeology. Professor Hayes led a historical archaeological field school at the Old Wadena site (21WD6) in 2009 and 2010. Dr. Hayes also directs the Heritage Management/Applied Archaeology graduate program at the University of Minnesota. The State Archaeologist teaches a class in this program each spring semester.

Archaeological programs at the state universities at Moorhead, St. Cloud, and Mankato continue to have robust archaeological programs and the addition of new faculty members in recent years at several of these institutions bodes well for the future of archaeological research and education in Minnesota. This is also true at Hamline University. About half of these university archaeologists mainly work outside of Minnesota, however, and efforts are being made to encourage them to stay closer to home. The recent loss of archaeological programs at Bemidji State University and the University of Minnesota – Duluth leaves a void in post-secondary archaeological education in north-central and northeastern Minnesota, although some courses are still offered at UMD utilizing local contract archaeologists and Superior National Forest personnel.

Public Education

The state continues to lack archaeological publications, archaeological museum exhibits, and archaeological fieldwork opportunities for the general public.

OSA Budget

The OSA has not had a Legislatively-appropriated budget increase since FY2001, although the Department of Administration has internally funneled an additional \$10,000 into the budget since FY 2009. The official budget is currently \$196,000 per annum, which covers two staff members, office rent, and operational expenses. As costs for benefits, salaries, rent, travel, and supplies have steadily increased, the funds available for accomplishing the mandatory duties of the State Archaeologist have decreased. As listed in Chapter 1, the State Archaeologist's duties are of both a regulatory and leadership nature. These duties cannot be accomplished by sitting in the office answering the telephone, sending emails, and answering letters. Effective site protection, research, and education require traveling around the entire state and active participation in fieldwork, professional meetings, and public events.

Minnesota Statutes 307.08, Subd. 5 states that "the cost of authentication, recording, surveying, and marking burial grounds and the cost of identification, analysis, rescue, and reburial of human remains" on private property "shall be borne by the state." The entity of state government responsible for these costs is not specified in the law, but because *authentication* is clearly the unique responsibility of the State Archaeologist, it is assumed that OSA must bear the costs of this activity. Because authentication of actual remains also involves ethnic identification, this cost too is the inferred responsibility of OSA.

There are instances when OSA staff are unable to complete authentication fieldwork due to the scope of a private lands project, the need for technical expertise and equipment not available at OSA, or due to time constraints. OSA staff are also not forensic anthropologists and thus cannot make ethnic identifications based on subtleties of skeletal morphology. In these instances, the OSA needs the assistance of outside consultants. In the past, OSA has paid for these services, but current budget constraints no longer allow this. Thus if private landowners are not willing to voluntarily pay for independent contractor authentication and identification costs, some private development projects may not be completed.

Minnesota Statutes 138.35, Subd. 2 states that the State Archaeologist shall "sponsor, engage in, and direct fundamental research into the archaeology of this state." Fundamental research cannot just be done by the State Archaeologist, volunteers, and unpaid interns. Fundamental research requires funding for such things as radiocarbon dates, equipment, technical expertise, and large field projects. Research is worthless without public dissemination of the results and publication of monographs also requires funding. Based on the current budget, the State Archaeologist's ability to *further fundamental research* is very limited.

MS 138.40, Subd. 3 requires that the State Archaeologist review public agency plans that may affect archaeological sites on public lands and MS 307.08, Subd. 10 requires that the State Archaeologist review public and private development plans that may affect burial sites. If agencies and private developers fully complied with these laws, the OSA would be overwhelmed. Clearly another full-time staff person would be needed at OSA if agencies and developers fully complied with plan submittal requirements.

It is clear that the ability of the OSA to carry out MS 307 and 138 obligations will continue to be limited and will even decrease if the OSA budget remains at a level established a

decade ago. The very survival of a functioning State Archaeologist's Office will be threatened if there is a budget decrease.

A Plan for 2011

Legislation

The OSA may undertake a legislative initiative in FY 2012 to address problems with the Field Archaeology Act (MS 138.31 - .42), although the state's budget crisis may require postponement of this initiative. The Field Archaeology Act has a number of problem areas including: 1) the *Legislative Intent* section emphasizes regulation of archaeology rather than preservation of sites; 2) the *Definition* section lacks several key concepts such as *agency*, *paramount right of the state*, *significant site*, and *undertaking*, as well as needing revision of certain words (e.g., *object* should eliminate "skeleton" and add "artifact" and *state site* should only refer to sites on non-federal public land and should eliminate the 1875 bottle/ceramic exclusion); 3) the MHS role in licensing should be eliminated as it unnecessary; 4) environmental review sections should be more consistent with federal legislation (e.g., review of *all* state *sponsored* undertakings that could harm *significant* sites); 5) it should be coordinated with and refer to other pertinent statutes such as 307 and environmental laws that involve archaeological matters and the State Archaeologist; and 6) the roles of various agencies should be clarified and expanded (e.g., agencies should submit development plans to MHS-SHPO, OSA, and when appropriate to MIAC). This initiative will be done in careful consultation with all major stakeholders including MIAC, MnDOT, DNR, MHS, and the Council for Minnesota Archaeology (CMA). An increase in the OSA budget could also be an element of the legislative initiative.

Development Plan Review

The OSA began officially reviewing Environmental Assessment Worksheets (EAWs) in 2007, but there is still a major deficiency in the environmental review process with respect to archaeological sites on public property. MS 138.40, Subd. 3 requires all public agencies, not just state agencies, to submit their development plans to OSA and MHS if known or scientifically predicted archaeological sites may be affected on lands they control. The majority of local governments do not conform to this requirement unless the project is required to have historic impact review under federal law (e.g., Section 106, NEPA) or under the Minnesota Environmental Policy Act (MS 116d). For instance, counties and cities rarely submit non-federal highway projects for review, although such projects represent the majority of local highway development activity in the state.

The OSA will work with state and local agencies to make them more aware of impacts to archaeological sites by various types of projects and will attempt to help agencies efficiently and effectively fulfill their review obligations. The most effective way to accomplish a basic archaeological project review is to provide secure access to the archaeological site database and to predictive models for unrecorded sites. OSA will work with the Minnesota Geospatial Information Office (MnGeo) to try to accomplish these objectives in FY 2011.

Information Management

Because effective agency plan review, response to calls from the public requesting information, and even many aspects of research rely on accurate and easily accessible knowledge of site distribution and site type, the site databases maintained by the OSA are essential. Yet the current databases are neither comprehensive nor widely accessible.

The *Site* and *Report* databases do not include boundaries of sites and survey areas. The *Burial Site Database* does not include many reported or suspected burial sites contained in OSA paper files if these sites have not been confirmed by professional archaeologists or are not listed in the *Archaeological Site* database. In addition, a compilation of historic era burials by Pope and Fee (1998) lists about 6,000 cemeteries, some unplatted, the majority of which are not contained in the OSA burials database.

Most agencies and all contract archaeologists in Minnesota do not have direct access to the OSA databases. To obtain complete site information they must visit the OSA offices, but OSA has limited ability to handle large numbers of visitors, requests for extensive photocopies, or complicated database searches.

Burials Site Database - As all confirmed burial sites subject to State Archaeologist review are defined as archaeological sites under both state and federal law, an effort will be made in FY 2011 to assign official state site numbers to any confirmed but unnumbered sites. Alpha numbers may be assigned to burial sites that are unconfirmed, but are based on relatively reliable information. All such sites will be added to the database.

Archaeological Site Database - As of January 1, 2007, the OSA took over updating the master archaeological site database that is shared with the SHPO. The OSA is working with the MnGEO to attempt to provide access to the site database on-line both for data input and output. This on-line access should be available to appropriate agencies and contract archaeologists. Iowa, South Dakota, and Wisconsin already have access to their site databases on-line. The OSA will also attempt to add site boundaries in GIS format by re-designing the site inventory form.

Archaeological Survey Manual

Agencies and contract archaeologists in Minnesota must follow various guidelines to insure their fieldwork and reporting is completed in a comprehensive and professional manner. Some of these guidelines are agency specific, while others apply to all projects reviewed under federal and state authorities. The current State Archaeologist while at the SHPO wrote the guidelines used in Minnesota for archaeological projects reviewed by the OSA and the SHPO (Anfinson 2005). Due to information that has been obtained from the MnDOT-sponsored Deep Testing, Farmstead, and Woodland Context projects as well other insights and advances over the last few years, the Survey Manual is in need of an update. The State Archaeologist will take the lead in this effort, but will coordinate with the SHPO, state agencies, contract archaeologists, and the Council for Minnesota Archaeology (CMA).

Archaeological Research

Critical research needs include radiocarbon dates for certain sites and complexes, a mounds status survey, site locational surveys and site excavations in poorly known regions to establish the basic cultural sequence and fine-tune predictive models, and investigations of the Early Prehistoric Period including finding and excavating well-preserved Paleoindian sites. University-based research will still have to take the lead in some of these investigations, especially those involving major excavations, but state level initiatives are essential to fulfilling others. The OSA will contribute staff time and other resources to further these research goals. Many of these initiatives may be funded through the *Statewide Survey of Historical and Archaeological Sites* noted above.

Radiocarbon Dating Needs

The need to better date the Brainerd ceramic complex were discussed in the 2009 Annual Report. These needs are being addressed by a Legacy Amendment funded initiative discussed above. An initiative to address absolute dating of other prehistoric cultural complexes will be considered if legacy funding is available in the 2012-13 biennium. Possible targets include southwestern Minnesota Woodland and Plains village complexes, Havana ceramic complexes in eastern Minnesota, and the Archaic Period in general.

Mound Status Survey

Another key Minnesota research need is a Mound Status Survey. Theodore Lewis and Jacob Brower first mapped most of Minnesota's 12,500 known burial mounds in the late 19th century. Some of these mound sites have not been visited by an archaeologist in over 100 years. The actual current condition of most mound sites is not known and very few have been officially authenticated by the State Archaeologist. While it is against the law to willfully disturb a burial ground, most land owners are unaware that mounds were mapped on their property and thus they do not know what to avoid disturbing.

A major effort to assess the status of mound sites in Minnesota began with the 2010 Legacy-funded LiDAR mound survey in Scott and Crow Wing counties discussed above. The State of Minnesota also provided Legacy funding to complete statewide coverage for LiDAR to be completed in FY2012. LiDAR survey of twenty-five (25) counties in southwestern Minnesota was completed in the spring of 2010. Information about the LiDAR initiative is available at: http://www.mngeo.state.mn.us/committee/elevation/mn_elev_mapping.html

Archaeological Survey and Site Locational Models

It is estimated that less than one-tenth of one percent of the archaeological sites in the state have been recorded by archaeologists. Many of the state's sites have already been destroyed or damaged by residential development, highway construction, commercial enterprises, and intensive cultivation. Because archaeological survey can't be required on every project and in every disturbance situation and because recorded sites represent only a small fraction of the states' archaeological resources, it is essential that accurate and comprehensive site locational models be developed to efficiently assist agencies with project reviews. The critical basis for

these models is a representative archaeological sample of the entire landscape in every region of the state.

In the FY 2008, the State Archaeologist's Annual Report discussed the history of statewide surveys and site locational modeling in Minnesota, beginning with the Hill-Lewis surveys in the late 19th century and ending with MnDOT's innovative MnModel project that began in the mid-1990s. The great need now is to provide local governments and other agencies that do not have staff archaeologists with a simple yet effective method of assessing site potentials in proposed development areas. The most practical way to do this is to map known sites and develop regional or county-based narrative models. These narratives would briefly describe the cultural history of a given area and suggest where different types of site should be located based on known site locations and resource-use hypotheses. Using funding from the Legacy Amendment (as discussed above), archaeological surveys have been initiated in poorly known areas to improve archaeological knowledge and site locational modeling in these areas. Swift County, Olmsted County, and the North Shore of Lake Superior are being addressed by Legacy Amendment contracts in FY 2010 and FY 2011. The focus of these surveys is to simply find more archaeological sites in poorly known areas of the state.



Two Pines archaeologist Michelle Terrell explains features at a historical site in Hastings to staff from MnDOT, the City of Hastings, and OSA.

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Appendix A: Glossary of Minnesota Archaeological Terms

Agency – any agency, department, board, office or other instrumentality of the state, any political subdivision of the state, any public corporation, any municipality, and any other local unit of government (MS 114c.02).

Archaic Tradition – The post-Paleoindian cultural tradition characterized by the disappearance of lanceolate projectile points and the appearance of stemmed and notched points beginning about 8000 B.C. Other Archaic developments include ground stone tools, domestic dogs, cemeteries, copper tools, and diverse hunting-gathering economies. The Archaic lasts until about 500 B.C.

Archaeological Site – a discrete location containing evidence of past human activity that holds significance for archaeologists.

Archaeology - the scientific study of important physical remnants of the cultural past.

Artifacts - natural or artificial articles, objects, tools, or other items manufactured, modified, or used by humans that are of archaeological interest.

Authenticate - to establish the presence of or high potential of human burials or human skeletal remains being located in a discrete area, to delimit the boundaries of human burial grounds or graves, and to attempt to determine the ethnic, cultural, or religious affiliation of individuals interred.

BP – Before Present; this is an expression of age measured by radiocarbon dating with “present” set at 1950, the first year radiocarbon dating became available. It is more correctly stated as “radiocarbon years before present” or RCYBP. It does not mean the same as “years ago” because raw radiocarbon dates need to be corrected for several inherent errors in order to be converted to actual calendar years.

Burial - the organic remnants of the human body that were intentionally interred as part of a mortuary process.

Burial Ground - a discrete location that is known to contain or has high potential to contain human remains based on physical evidence, historical records, or reliable informant accounts.

Cemetery - a discrete location that is known to contain or intended to be used for the internment of human remains.

Complex - a group of sites or phases linked by trade or behavioral similarities, but not necessarily of the same ethnic, linguistic, or cultural grouping (e.g., Hopewell)

Component - a discrete cultural entity at a particular site; one site can have multiple components (e.g., prehistoric and historic, multiple prehistoric)

Contact Period – the initial period of intensive Euroamerican and Indian interaction prior to the signing of any major treaties (1650 – 1837)

Context – the relationship between artifacts and where they are found, such as depth from surface, association with soil or cultural features, or cultural component assignment. Not the same as *historic context*.

Disturb - any activity that significantly harms the physical integrity or setting of an archaeological site or human burial ground.

Feature – non-artifactual evidence of human activity at an archaeological site usually expressed as noticeable soil disturbances such as pits and hearths. It can also refer to masonry walls and other structures at historical archaeological sites.

Field Archaeology - the study of the traces of human culture at any land or water site by means of surveying, digging, sampling, excavating, or removing objects, or going on a site with that intent (MS 138.31).

Geomorphology – the study of the earth’s surface and how it has evolved generally with regard to soils and sediments.

Grave Goods – objects or artifacts directly associated with human burials or human burial grounds that were placed as part of a mortuary ritual at the time of internment.

Historic Context – an organizational construct that groups related property types (e.g., *archaeological sites*) together based on a similar culture, geographical distribution, and time period. The Minnesota SHPO has developed a number of statewide historic contexts for the Precontact, Contact, and Post-Contact periods. An example of a Precontact context is Clovis. Not the same as *context* used in a purely archaeological sense.

Historic Period – synonymous with the *Contact* and *Post-Contact* periods when artifacts of Euroamerican manufacture are present or written records available; begins about 1650 in the Upper Midwest.

Horizon - a technological or behavioral attribute with broad geographical distribution, but not necessarily at the same time (e.g., fluted point horizon); also a particular layer within an archaeological site.

Human Remains - the calcified portion of the human body, not including isolated teeth, or cremated remains deposited in a container or discrete feature.

Lithic – made of stone; lithic artifacts are generally manufactured by either chipping or flaking high quality materials (e.g., chert, chalcedony) to produce tools such as knives, scrapers, and projectile points or by grinding or pecking granular rocks (e.g., sandstone, granite) to produce tools such as mauls, hammerstones, or axes.

Lithic Scatter – an archaeological site evidenced almost exclusively by the presence of stone tools or stone tool manufacture.

Mississippian Tradition – A Late Prehistoric cultural tradition associated with developments originating at the Cahokia site on the Mississippi River across from St. Louis. Characteristics include the use of shell-tempered pottery, intensive corn horticulture, settled village life, and small triangular arrowheads. Mainly found in southern Minnesota, it lasts from about A.D. 1000 to A.D. 1650.

Qualified Professional Archaeologist - an archaeologist who meets the United States Secretary of the Interior's professional qualification standards in Code of Federal Regulations, title 36, part 61, appendix A, or subsequent revisions. These standards require that the archaeologist has a graduate degree in archaeology or a closely related field, has at least one year's full-time experience doing archaeology at the supervisory level, and has a demonstrated ability to carry research to completion. There are specific additional standards for prehistoric, historic, and underwater archaeologists.

Paleoindian Tradition – The earliest major cultural tradition in the New World characterized by the use of well-made lanceolate projectile points and the hunting of now extinct animals such as mammoth and giant bison. It is dated to 12,000 B.C. – 8000 B.C.

Period - a temporal span often associated with a particular cultural tradition (e.g., Woodland)

Petroglyph - a design inscribed into a rock face by grinding, pecking or incising; examples can be seen at the Jeffers site in Cottonwood County and Pipestone National Monument.

Phase - a geographically discrete taxonomic unit represented by a group of sites with cultural and temporal similarity (e.g., *Fox Lake* in southwestern Minnesota)

Phase I Survey – synonymous with a reconnaissance survey; a survey whose objective is to find archaeological sites, map the horizontal limits of the sites, and define the basic historic periods present.

Phase II Survey – synonymous with an evaluation survey; intensive fieldwork whose objective is to determine the significance of an archaeological site by assessing the site's research potential as demonstrated by the robustness of the identifiable historic contexts present and the integrity of artifacts and features associated with those contexts. Significance is generally equated with eligibility to the National Register of Historic Places.

Phase III Project – synonymous with a treatment activity or site excavation; very intensive fieldwork generally done to mitigate the adverse effects of development upon a significant archaeological site through data recovery utilizing numerous formal excavation units or other intensive investigative methods.

Pictograph – a design painted or drawn on a rock face.

Plains Village Tradition - A Late Prehistoric cultural tradition associated with the establishment of settled village life along major river valleys in the Great Plains. Characteristics include the use of globular pots that are smooth surfaced and grit tempered as well as intensive corn horticulture and fortifications. Found in western Minnesota, the tradition lasts from about A.D. 1000 to A.D. 1500.

Post-Contact Period – the period of Euroamerican as opposed to Indian dominance in Minnesota beginning with the first major land cession treaties in 1837.

Precontact Period –the time period dating from the earliest human occupation up to the significant incursion of European culture usually dated to about 1650 in the Upper Midwest; synonymous with *Prehistoric Period*.

Prehistoric Period – synonymous with the *Precontact Period* (see above); sometimes divided into Early (12,000 – 5000 B.C.), Middle (5000 B.C. – A.D. 1000), and Late (A.D. 1000 – 1650).

RCYBP – Radiocarbon Years Before Present means the measured aged of a radiocarbon sample with Present set at 1950, the first year of extensive radiocarbon dating. Because all dates are subject to inherent errors, the actual age of any sample needs to be corrected. The error can be thousands of years for dates over 10,000 RCYBP.

Recorded Cemetery - a cemetery that has a surveyed plat filed in a county recorder's office.

Section 106 – refers to Section 106 of the National Historic Preservation Act of 1966, which states that federal agencies must *consider* the impacts their undertaking have on significant historic properties and *consult* with knowledgeable entities (e.g., SHPO) about these impacts.

State site or state archaeological site - a land or water area, owned or leased by or subject to the paramount right of the state, county, township, or municipality where there are objects or other evidence of archaeological interest. This term includes all aboriginal mounds and earthworks, ancient burial grounds, prehistoric ruins, historical remains, and other archaeological features on state land or on land subject to the paramount rights of the state (MS 138.31).

Tradition - a prehistoric culture based on lasting artifact types or archaeological features (e.g., *Paleoindian*)

Woodland Tradition – The post-*Archaic* cultural tradition first identified in the Eastern Woodlands of the United States. It is characterized by the appearance of pottery and burial mounds. Wild rice use becomes intensive in northern Minnesota with limited corn horticulture eventually appearing in the southern part of the state. Woodland begins about 500 B.C. and lasts until A.D. 1650 in northern Minnesota, but is replaced by Plains Village and Mississippian cultures in southern Minnesota about A.D. 1000.