MINNESOTA HISTORICAL SOCIETY

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FIELD CONSERVATION GUIDELINES FOR MINNESOTA ARCHAEOLOGISTS

FOREWORD:

It is impossible to write a definitive "rules and regulations" document that will cover every contingency in the field. Set rules are no substitute for an educated individual making responsible decisions in the field based on the body of his or her knowledge. The ultimate responsibility for doing things correctly to best of your ability and resources is yours. The Objects Conservation Lab is here to help and give advice. Do not hesitate to contact us if you run into a difficult problem or need assistance in any way.

The primary purpose of this outline is to provide basic guideline for identifying the condition of objects and the optimal measures to take to insure maximum information recovery. The secondary purpose is to make it clear that modern archaeological field conservation is based on scientific principles and current research. Continuing to utilize out-dated materials and treatments simply because they work quickly, are cheap, and have "always" been used is unacceptable behavior.

I. Before you go to the field:

- Know your site conditions:

Predictive modeling is the state-of-the-art for archaeological resource management. There is a parallel process in archaeological conservation that can utilize the same primary data, such as climate, soil type, and general geomorphology. It is applied on a more micro-scale, such as stratigraphic level, and used to give a general idea of what condition the artifacts will be in based on material. It helps to know what materials to expect, e.g. if you are excavating a 19th century flour mill, it is reasonable to expect large amounts of ferrous metal objects, masonry, wood, and possibly leather, some of which will be waterlogged or wet. Knowing this will allow you to budget for and obtain the necessary recovery and stabilization materials so you will not be caught short in the field at the last minute. This type of information should be obtained during Phase I of the research.

Recovery strategies, such as limited sampling, should be factored into Phases II and III if the

probability of recovering vast amounts of corroded metal is high, and the cost of conserving large amount of fragile and unstable objects and materials is beyond the project budget.

-For the most part in Minnesota, *insitu* conservation will be minimal at most for prehistoric sties.

- **Keep in mind that most materials adjust to their burial environment over time, and that it is the abrupt change in moisture content and temperature tha can cuase fragile materials to rapidly deteriorate when exposed to the ambient atmosphere.**

Organic materials will most likely be osteoligcal materials including human and animal bone, and other proteinaceous/collagenous components such as fish scales. Shell has similar requirements for preservation.

- The state of preservation depends on two main factors:
    - Soil moisture
    - Soil chemistry
        - pH (acidity/alkalinity scale)
        - particle size
        - matrix material type (clays, loam, sand)
- Bone material is best preserved in
    - Neutral to slightly alkaline soils
    - Moderate to dry moisture content'
    - Minimal bioturbation
    - Burial below the plow and cryoturbation zones
    - Loamy soils with moderate to low clay content

Inorganic materials include lithics, ceramics and metals

Lithics will generally be well preserved without any long-term conservation problems caused by burial. Lithics with a high silica content such as obsidian and chert may have a "varnish patina" caused by hydration. This can be used for dating such objects and should not be seen as needing treatment. Objects buried in depositional environments with high calcium carbonate content may have calcareous crusts on their surfaces.

Low-fired ceramics usually survive burial well. Wet ceramics that are allowed to dry out too quickly may shrink and crack. The surfaces may be friable and easily eroded. The edges of the joins may also be fragile, so care must be taken when 'dry-fitting sherds.

Metals preserve best in well drained, neutral to mildly alkaline soils.

They may also be very well preserved in wet, anaerobic soils, but recovery from this environment must be well planned or deterioration will be very rapid and irreversible.

Native copper is usually completely oxidized and can sometimes have uneven corrosion crusts on the surfaces.

Thin, hammered native copper objects can be extremely fragile and must have special measures used for field stabilization and removal.

Historic and urban sites will present the potential to recover large amount of unstable organic materials.

These sites can also offer the best prospects to know what objects to expect and where since there may be historical accounts and other documents that may identify and describe major features.

Excavators must be well prepared with safety supplies for workers, since there may be the prospect of live infectious disease organisms in well and privy sites.

Excavators should also be well prepared with field recovery supplies and storage containers, since wet organic materials must be kept wet until proper stabilization treatments can be carried out.

A BRIEF LIST OF SUGGESTED READINGS:

Collins, Chris. 1995. The Care and Conservation of Palaeontological Materials. Butterworth-Heinemann. *The sections on sub-fossil bone are written by archaeological conservators, and the entire book contains update information.*

Storch, Paul. 1997. "Conservation of Archaeological Shell Objects", Number 22, Sept. 1997, Conservation Notes. Texas Memorial Museum, The University of Texas at Austin, Austin, TX.

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Cronyn, J.M.. 1992. The Elements of Archaeological Conservation. Routledge, New York.

Hodges, H.W.M.. 1987. In Situ Archaeological Conservation. Getty Conservation Institute, CA.

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Poirier, D.A., and Feder, K.L.. 2001. Dangerous Places: Health, Safety, and Archaeology. Bergin and Garvey, CT.

Singley, K.. 1988. The Conservation of Archaeological Artifacts From Freshwater Envrionments. Lake Michigan Maritime Museum. South Haven, MI.