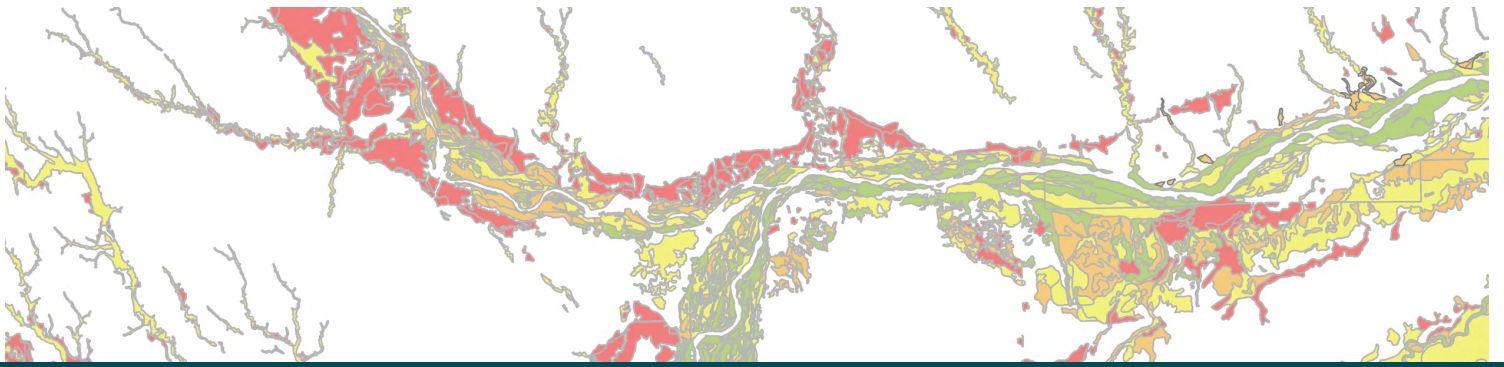
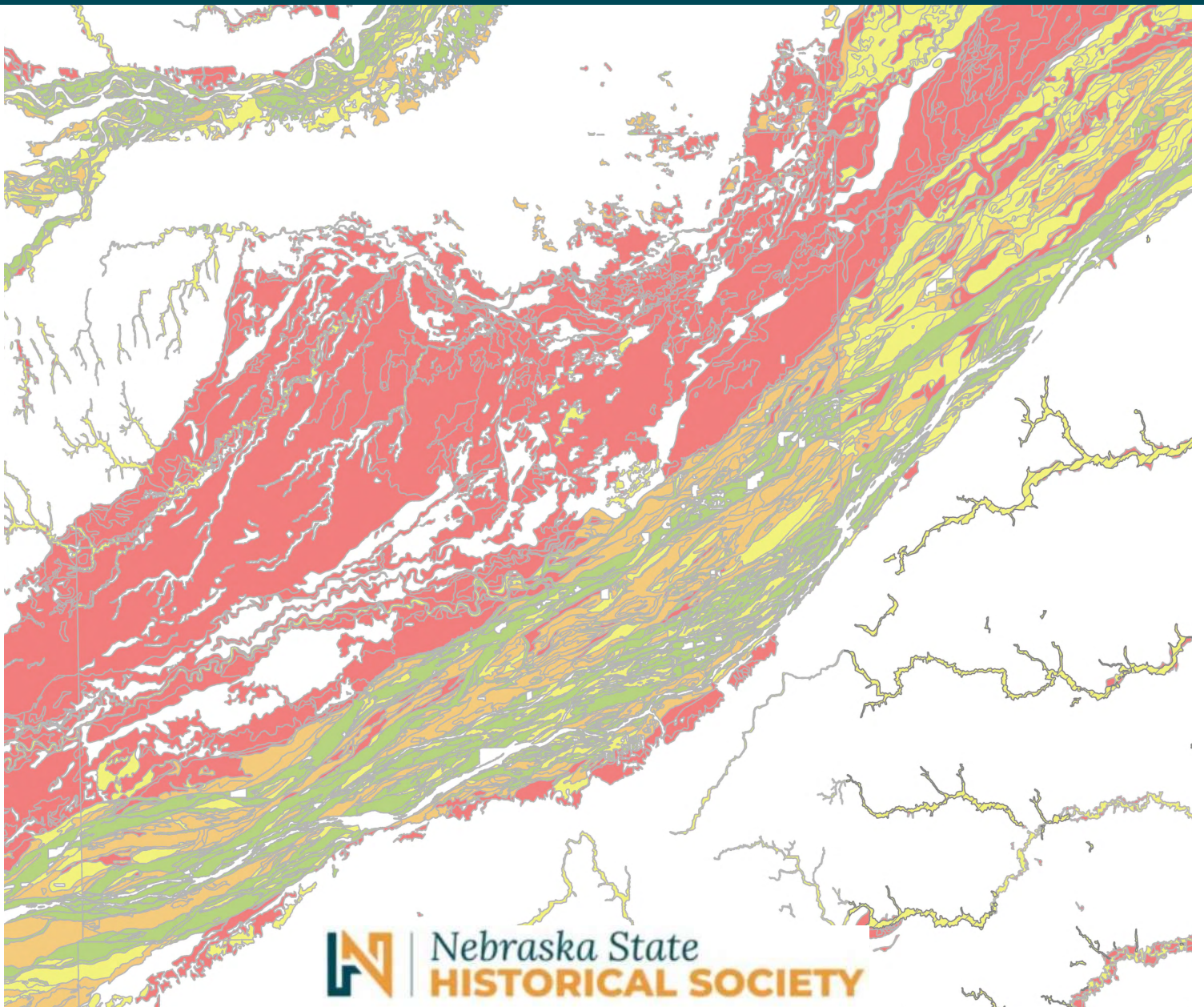




Nebraska Deeply Buried Archeological Deposit Potential User Guide

ARCHEOLOGICAL AND HISTORIC GEOGRAPHIC INFORMATION SYSTEMS (GIS)



Nebraska Deeply Buried Archaeological Deposit Potential User Guide

Anthony L. Layzell, Ph.D.
Assistant Scientist
Kansas Geological Survey
University of Kansas

John Swigart, M.A.
GIS Coordinator
National Association of Tribal
Historic Preservation Officers

Rolfe D. Mandel, Ph.D.
Distinguished Professor
Senior Scientist, Kansas Geological Survey
University of Kansas

David T. Williams, M.A.
State Archeologist
State Archeology Office
Nebraska State Historical Society

Courtney L. Ziska
Highway Environmental Biologist
Nebraska Department
of Transportation

Annie M. Davis, M.A.
IT Applications Developer
State Archeology Office
Nebraska State Historical Society

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DISCLAIMER:

This project is designed to evaluate the geologic potential for buried cultural deposits in Nebraska. This GIS resource is simply a tool to determine whether proposed areas of potential effect (APE) possess a greater or lesser likelihood of requiring additional subsurface exploration to establish the presence of buried archeological properties. The product should never be used solely to offer determinations about the definitive presence or absence of cultural resources from the perspective of compliance with Section 106 of the National Historic Preservation Act and any other related state or federal laws and regulations. The Nebraska State Historical Society and the University of Kansas do not assume professional liability for parties using this product to make Section 106 determinations without additional investigations.

1. Introduction

1.1 Scope and Purpose

This user's guide is intended as an introduction to the use of the *Nebraska Buried Sites GIS*, developed by the Nebraska State Archeology Office and the Kansas Geological Survey under NTRC Grant Project SRP-P1(20) M100.

This GIS application is intended for use by cultural resource specialists in the initial phase of determining whether targeted investigations for deeply buried sites are necessary during project planning and development. The GIS is designed to enhance the ability to predict where these types of resources may or may not occur. It is specifically intended for use in Nebraska Department of Transportation (NDOT) and the Federal Highway Administration (FHWA) undertakings but is anticipated to also prove useful for cultural resource specialists in other agencies, as well as geomorphologists conducting research in the state.

1.2 Software Notes

The *Nebraska Buried Sites GIS* SSURGO model was developed using ESRI ArcGIS Pro 2.8.3. All data was combined and published using ESRI WebExperience Builder to produce the *Nebraska Buried Sites GIS* and the *Nebraska Buried Sites Potential – Localities* user applications.

2. Access

2.1 Accessing the Map

The *NE Deeply Buried Archeological Deposit Potential* web application – the public version of the prediction model – is accessible via the Nebraska State Historical Society (NSHS) website. For access to the *Buried Archeological Deposit – Localities* map which additionally contains location specific testing data, a request must be submitted via email to hn.archeology@nebraska.gov. Approval is dependent upon SOI-qualification of either the requestor or a supervisor of the requestor. Please provide a CV/resume for either yourself or a supervisor/advisor as well as information about your relation to the supervisor and any connection to a company or institution in the body of the email request.

To protect recorded archeological site locations, the Nebraska State Archeology Office's data is protected by state statute (Neb. Revised Statutes 84-712.05(14) and (15)). The Nebraska State Archeology Office reserves the right to restrict access to specific localities and site location information when deemed necessary.

3. Navigation

3.1 Layers

The *NE Deeply Buried Archeological Deposit Potential* web app contains several Reference Layers to assist users in pinpointing a particular location or area of interest. Click the Search widget in the top right corner of the application to search for any of the options listed below. Selecting a result will automatically zoom the map's focus to the feature.

Reference Layers:

City – Search cities or towns by name.

County – Search for the county by name.

Legal – Section Township Range – Search for legal descriptions by using a Section-Township-Range Direction format (SSTTRD) following the following examples:

- “02-09-07E” will locate Section 2, Township 9 (north is assumed), Range 7 east
- “19-22-55W” will locate Section 19, Township 22, Range 55 west

The City and Sections layers are toggled off by default when opening the map. They can be toggled on by clicking the Layers button (visible below) in the top right corner of the application and will become visible when zoomed in to the necessary levels.



Search widget



Layers widget

3.2 Navigation by Attribute Table

3.2.1 Open Feature Layer Table

1. Tables for both Buried Sites layers are accessible via the tab at the bottom center of the map window. Utilize these to select a feature of interest.
2. Click the Actions menu in the upper righthand corner of the table (visible at the end of this section) and then *Zoom to* or *Pan to* based on preference.
3. Ensure navigation is done under *Selected* subheading, as opposed to the *All data* subheading.

Alternatively, selecting the four-dot menu in the top right corner of the tables allows the Set filter option. Any field can be filtered by selecting it from the drop-down menu and typing in the value that is wanted.

Attribute tables can display only selected items by clicking on the “Show Selection” button in the top right corner of the table window.

Selection can be cleared using the “Clear Selection” button in the top right corner of the table window.

3.2.2 Adding Shapefiles

Shapefiles depicting an area of interest may be added to the map by clicking the Add Data icon (visible below) in the top right of the application. If shapefiles do not initially show up, click the four-dot menu icon next to the data layer and select “Add to map”.

**Note: Shapefiles should be contained within a zipped archive/folder.*



Actions button



Add Data widget

3.3 Buried Archeological Deposit Potential – Localities Navigation:

This web map is attachment-focused. The additional column allows users to find specific documentation by area. Clicking on a point in the map window, navigating via the Locality table, or using the Search widget will update the attachment window to reflect the selected point. All other navigation methods listed above will still apply.

4. The Geoarcheological Data

4.1 Layers

The geoarcheological data featured in the Buried Sites-Statewide Potential layer is organized by county. Each county group layer contains two feature classes categories (“Potential” and “Additional Consideration”) that spatially illustrate the potential for buried cultural resources based on parent material and landscape position/modification.

The data featured in the Buried Sites-Sandhills Potential layer is split based on their classification, county, and the river of association.

The publicly accessible version of the *NE Deeply Buried Archeological Deposit Potential* features only the predictive polygons. The *Buried Archeological Deposit – Localities* model, with more limited access, contains an additional layer that depicts the referenced localities used to assess assigned potential ratings.

Localities are areas where geoarcheological field data is available from previous research conducted in the state. The data from these sites were referenced in the assignment of potential for buried cultural resources. This data typically includes a detailed description of the soil-stratigraphic record of a particular location, along with photos and illustrated soil profiles. This data is based on the in-field examination of soil cores or cuts along stream banks and other eroded areas by a geomorphologist.

The geologic **potential** for buried cultural resources on the Buried Sites-Statewide Potential layer, as depicted for each county, was assigned to different landform-sediment assemblages (LSAs) based on consideration of four factors, including 1) the age of sedimentary deposits, 2) the soil-stratigraphic record, 3) the depositional environment, and 4) the drainage conditions. For more information on LSAs, the methodology used in the creation of the potential layers, and descriptions of the assigned categories, see *Systematic Approach to Identifying Deeply Buried Archeological Deposits Part I* available under Archeology Digital Resources on the Nebraska State Historical Society website.

The geologic **potential** for buried cultural resources on the Sandhills Potential layer, as depicted for each county, was assigned to elevations levels relative to the floodplain of major rivers. For more information on the REM model used and other methodology used to assign potential to the Sandhills region, see *A Statewide Geographic Information System (GIS) as a Predictive Tool for Locating Deeply Buried Archeological Deposits in Nebraska: Phase III - The Sandhills Region* available under Archeology Digital Resources on the Nebraska State Historical Society website.

4.2 Visibility

The Sections reference layer is initially turned off on in the map window to reduce clutter during use. The layer can still be searched and used for navigation. But, if full visibility is required, the layer can be toggled back on via the Map Layers widget in the top right corner of the application. All layers except the County layer are visible depending on the extent to which a user is zoomed in on the map. The predictive layers can be seen on a multi-county level and the Sections and City layers can be seen on a single-county level.

Zooming in close to the relevant data does allow for better performance overall.

4.3 Exploring the Geoarcheological Data

4.3.1 Buried Sites-Statewide Potential Layer

The geologic potential for buried cultural resources of a given area is depicted based on the assignment of four categories: Low, Low-Moderate, Moderate-High, or High. In addition to scoring, a “variable” assignment was used for selecting map units associated with a range of different landscape positions (i.e., different LSAs) that have varying potential (e.g., upland drainageway vs. terrace). The attribute table of this layer consists of details related to the assignment of scores resulting in the final potential rating. The fields contain data related to flood frequency, drainage, geomorphology/landscape position, soil horizonation, and parent material. For more information on these fields and how scores were calculated, see the final project report in Part I of this document.

4.3.2 Buried Sites-Additional Consideration Layer

This layer consists of discrete categories of map units associated with loess, till, alluvium (in upland settings; typically, paleoterraces), and outwash parent materials. A general “uplands” category includes map units associated with residual soils, rock outcrops, and colluvium (not footslopes).

Although map units in the “Additional Consideration” feature class were not scored, certain geomorphic descriptions suggest that potential for buried cultural resources may be present. Therefore, the “additional consideration” category was created in this feature class for these specific map units and notes provided pertaining to the nature of the potential.

4.3.3 Buried Sites-Sandhills Potential

The geologic potential for buried cultural resources of a given area is depicted based on the assignment of four categories: Low, Low-Moderate, Moderate-High, High, or Variable. The attribute table of this layer consists of details related to the assignment of scores resulting in the final potential rating. The fields contain data related to elevation relative to the nearest floodplain and the LSA category.

4.3.4 Buried Sites-Localities Layer

Locality data collected from across the state through the course of geoarcheological studies is available in the Localities layer. To explore the data available for each specific locality, click a locality feature on the map to update the feature panel. Each feature panel will contain the available data for a locality, including its name, landform type, and chronologic dates available for associated

buried soils, the report reference, and any photo, profile, and report attachments. Click the .jpg and/or .pdf links to view these file attachments in a new window. *[Page numbers included in attachment file names (i.e., p67, p204, etc.) indicate page location of photo/profile in attached referenced report.]*

Note: Not all fields and attachment types will be available for each locality. For example, some localities may not have an associated radiocarbon chronology, due to the absence of datable material during the original research visit. Others may not have photos and/or profiles, due to these not being included in the final report, as referenced. In addition, be aware that the quality of the image and report attachments is dependent on the quality of the original hard-copy or scanned document available.

5 Maps

5.1 Print

In the Print menu, you can choose to print a map showing your current view with or without a legend. Toggle layers on or off in the Legend widget to remove features from print display.

6 Additional Information

6.1 Updates

As future funding, research, and time allow, *NE Deeply Buried Archeological Deposit Potential* is anticipated to be updated with revised values of geologic potential based on the addition of new geoarcheological locality data. These updates are the best means of ensuring that the data presented in the GIS is as accurate as possible for use in cultural resource planning. Please contact the State Archeology Office at the Nebraska State Historical Society for any updates that may be available (see contact information below).

6.2 Questions and Comments

Questions and comments on the *NE Deeply Buried Archeological Deposit Potential* may be directed to the State Archeology Office at Nebraska State Historical Society:

Dave Williams
State Archeology Office
Nebraska State Historical Society
5050 N. 32nd Street
Lincoln, NE 68504
Email: dave.williams@nebraska.gov

7. References

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