INTENSIVE PHASE I ARCHEOLOGICAL SURVEY
OF A PROPOSED RAIL DEVELOPMENT AREA,
HARDIN TOWNSHIP,
HARDIN COUNTY, IOWA

Section 23, T89N, R21W

BCA 1965

Prepared for
Iowa Falls Area Development Corporation
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April 2013
This report presents the results of an intensive Phase I archeological and geomorphological investigation performed for the Iowa Falls Area Development Corporation, by Bear Creek Archeology, Inc., Cresco, Iowa. The investigation was to determine the impact on potential cultural resources located at the site for a proposed rail development area. The area of potential effect is approximately 22.6 ha (55.8 ac) located in portions of the NW¼ and NE¼ of Section 23, T89N, R21W, Hardin Township, Hardin County, Iowa. The project area is associated with the Des Moines Lobe, and the area is located on glacial upland landforms, outwash deposits, and historically drained wetlands. Bear Creek Archeology, Inc. personnel conducted the field investigation on April 8 and 9, 2013.

Prefield research indicated the project area had an overall low archeological potential, with moderate potential on upland ridges and along the margins of prehistoric wetlands. A review of the records held at the Office of the State Archaeologist indicated six previously recorded sites and four previous investigations were located within a 1.6 km (1 mi) radius of the project area. None of these sites resides within the project area.

The field investigation consisted of documenting local landforms through soil probing ($n = 4$) and a pedestrian survey. The majority of the project area consisted of upland knolls/rises and upland flats, which hold some archeological potential. The remainder of the project area consisted of historically drained, low-lying Woden member landforms, which hold low archeological potential. The highest point within the project area, a knoll along the western margin of the project area representing a Dows formation landform overlooking the drained wetland, holds moderate archeological potential. The investigation resulted in no cultural resources being found within the project area. Bear Creek Archeology, Inc. recommends no further work within the given project area.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANAGEMENT SUMMARY</td>
<td>i</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>iii</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>PROJECT LOCATION</td>
<td>1</td>
</tr>
<tr>
<td>INVESTIGATION PREMISES</td>
<td>1</td>
</tr>
<tr>
<td>ENVIRONMENTAL CONTEXT</td>
<td>2</td>
</tr>
<tr>
<td>Physiographic Region</td>
<td>2</td>
</tr>
<tr>
<td>Dows Formation</td>
<td>3</td>
</tr>
<tr>
<td>Peoria Formation</td>
<td>3</td>
</tr>
<tr>
<td>Noah Creek Formation</td>
<td>3</td>
</tr>
<tr>
<td>Upland Landform Model</td>
<td>4</td>
</tr>
<tr>
<td>Project Area Soils and Landscape Analysis</td>
<td>4</td>
</tr>
<tr>
<td>METHODS AND RESULTS</td>
<td>6</td>
</tr>
<tr>
<td>Archival Research</td>
<td>6</td>
</tr>
<tr>
<td>Field Investigation</td>
<td>7</td>
</tr>
<tr>
<td>RECOMMENDATIONS AND CONCLUSIONS</td>
<td>9</td>
</tr>
<tr>
<td>REFERENCES CITED</td>
<td>11</td>
</tr>
<tr>
<td>FIGURES</td>
<td>14</td>
</tr>
<tr>
<td>APPENDIX A: National Archaeological Database Form</td>
<td>29</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1. Soil information for the project area..........................................................5

LIST OF FIGURES

Figure 1. Physiographic location of the project area ..............................................
Figure 2. Topographic coverage of the project area ..............................................
Figure 3. Scale map of the project area ..................................................................
Figure 4. Diagram of potential landform components ............................................
Figure 5. Soil map of the project area ...................................................................
Figure 6. 1850 map of the project area .................................................................
Figure 7. 1892 map of the project area .................................................................
Figure 8. 1903 map of the project area .................................................................
Figure 9. 1916 map of the project area .................................................................
Figure 10. 1939 aerial photograph of the project area ...........................................
Figure 11. 1958 aerial photograph of the project area ............................................
Figure 12. Coverage of the project area. View to the northeast ...........................
Figure 13. Coverage of the project area. View to the southeast ............................
Figure 14. Coverage of the project area. View to the southwest ...........................
Figure 15. Coverage of the project area. View to the northwest ..........................
Figure 16. Coverage of the central upland depression. View to the east .............
INTRODUCTION

Bear Creek Archeology, Inc. (BCA), Cresco, Iowa, conducted an intensive Phase I archeological investigation of a proposed rail development area for the Iowa Falls Area Development Corporation of Iowa Falls, Iowa. The archival research, fieldwork, analysis, and reporting have been completed in accordance with the Secretary of the Interior’s standards regulating the identification of historic properties (National Park Service [NPS] 1983). The fieldwork and report presented herein meet or exceed the guidelines for archeological investigations in Iowa (Association of Iowa Archaeologists [AIA] 1999). The purpose of this investigation was to identify possible cultural resources at the Phase I level. The fieldwork was conducted on April 8 and 9, 2013.

PROJECT LOCATION

The project area is located in central Iowa within the physiographic region known as the Des Moines Lobe (Prior 1991; Figure 1). The boundaries of the survey area were provided to BCA by Cindy Litwiller of the Iowa Falls Area Development Corporation (Figure 2). This area is located adjacent to JJ Avenue between two railroad lines: Chicago, Rock Island, and Pacific Rail Line to the south and Illinois Central Gulf Rail Line to the north (Figures 2 and 3). The project area consists of Dows Formation glacial upland landforms and drained Woden Member wetlands. The area examined is 22.6 ha (55.8 ac) and includes portions of the NW¼ and NE¼ of Section 23, T89N, R21W in Hardin Township, Hardin County, Iowa (Figure 2).

INVESTIGATION PREMISES

The survey strategy of this Phase I investigation was based on an analysis of the project area and the landforms that exist within it. Because geological processes determine the geographic and pedologic character of a region, the understanding of an area’s geologic history is crucial to any evaluation of the archeological record. Landform and soil characteristics have a strong influence on the presences and distribution of the plant and animal communities utilized by human populations. Geological processes not only affect the patterns of human settlement, but they are also largely responsible for the preservation and destruction of the archeological record. Thus, the archeological record can be viewed as a product of both cultural and geological processes (Bettis and Green 1991).

Because archeological sites are incorporated into the environment by natural formation processes, they may be viewed not only as cultural remains but also as geological deposits. This perspective on the location of sites allows the investigator to create predictive models of archeological site occurrence and patterned distributions within a
given area, relative to its existing landforms (Bettis and Benn 1984; Bettis and Thompson 1981). Such an approach also proves useful in for the recognition of post-settlement alluvium (PSA), madeland, plowzones (Ap horizons), and other disturbances that may have modified the area under investigation.

This type of landform modeling as a tool of cultural resource management is crucial to the development of survey strategies. More geologically sensitive strategies allow the investigator to focus on those areas where the probabilities of site occurrence are highest, reducing or eliminating the cost of surveying those areas where sites would not logically occur (e.g., made-land, heavily disturbed areas, or landforms consisting entirely of recent alluvium, etc.). Within those areas of focused investigation, informed survey strategies allow for the determination of the depth and distribution of subsurface tests necessary for the location of buried cultural deposits. Additionally, the nature of the proposed impacts can be assessed in terms of the landforms present.

ENVIRONMENTAL CONTEXT

Physiographic Region

The project area is located in central Iowa within the Des Moines Lobe physiographic region (Prior 1991; Figures 1). This region was created during the extension of the Wisconsinan Laurentide ice sheet into Iowa approximately 14,000 years ago (Kemmis et al. 1981). Because this area was covered with glacial ice, the thick deposition of loess common in most of Iowa was prevented (Prior 1991). Subsequently, the Late Wisconsinan-age glacier deposited materials commonly referred to as the Dows Formation (cf. Hoyer 1980; Kemmis et al. 1981; Ruhe 1969). Relief on the Des Moines Lobe is generally low. As the region has only been free of glacial ice for 12,000 years, the drainage system is still developing. Glacial till, more resistant to erosion than loess, further slows the process of valley incision.

A large portion of the lobe area is hummocky with distinct ridges and swales marking the limits of the major ice advances. The hummocky areas are comprised of elevational highs such as end moraines, kettles, and knobs. The relatively flat plains are underlain by ground moraine till (Prior 1991). Swales, depressions, and low relief drainages produce a grid across portions of the Des Moines Lobe. These linked drainage-depression systems are glacial features that were formed during the collapse of stagnant-ice environments rather than moving ice. Evidence for these environments can be found regionally across the lobe (Bettis et al. 1996). Recent work on the glacial and post-glacial deposition and environmental changes on the Des Moines Lobe have further refined sequences from earlier works (Bettis et al. 1996; Kemmis et al. 1981; Ruhe 1969). The following section summarizes what is currently known about terminal Pleistocene deposits and those associated with the Holocene-age DeForest Formation (Bettis et al. 1996).
Dows Formation

Almost all of the uplands within the Des Moines Lobe are covered with thick, glacially deposited sediments termed the Dows Formation (Kemmis et al. 1981). The formation is subdivided into four different members: Alden, Morgan, Lake Mills, and Pilot Knob, which were deposited by glacial advances between ca. 15,000 and 12,000 B.P. (Bettis et al. 1996). The loamy Alden Member contains till that was deposited beneath the glacial ice. The Morgan Member is comprised of loamy sediments that exhibit a higher density of coarse materials as compared to the Alden Member. These materials are associated with the upper and marginal portions of the glacier. The Morgan Member consists of alternating beds of unsorted and size-sorted sediments. The Lake Mills Member consists of an upper bed of fine-grained sediments and a thinner, lower bed of sands and gravels. This member formed in glacial lakes through the initial transport of larger sediments by glacial meltwater followed by fine-grained deposition consistent with low-energy lake environments. The Pilot Knob Member contains the coarsest sediments of the Dows Formation. This member consists of sands and gravels associated with subglacial meltwater and streams. The sediment-laden meltwater often resulted in the formation of kames and eskers.

Peoria Formation

With the retreat of the glacial ice mass, fine sediment ground by the glacier was deposited along waterways. This silty sediment was in turn picked up by wind and redeposited as Peoria Formation loess. The majority of the silty loess was deposited between ca. 14,000 and 11,000 B.P. (Bettis et al. 1996:26). However, minor eolian deposition of silt and sand continues to the present. In the vicinity of the project area, Peoria loess overlays most formations that were present during the period of major loess deposition. The uplands are loess-mantled as are the upper and older portion of the Noah Creek Formation Wisconsinan outwash terraces. Although the major period of loess deposition predates most of the known human record for the region, archeological sites are found within the loess rather than just on the surface. The presence of cultural horizons within the loess can be due to later minor eolian deposition and because of soil upbuilding caused by the long-term action of earthworms and other natural forces (Van Nest 1993).

Noah Creek Formation

Sediment deposited by water originating from the melting of the Wisconsinan glacial ice between ca. 14,000 and 11,000 B.P. is termed the Noah Creek Formation. These sediments are generally made up of coarse-grained materials, mostly sand and gravel, which reflect the high-energy of the meltwater flow. The Noah Creek Formation is found on and within the high terraces along the valley walls of streams originating from the melting glaciers and spread across outwash plains where the glacial water did not produce definite channels (Bettis et al. 1996:22). Terraces of the Noah Creek Formation sediment are also called Wisconsinan outwash terraces. Because these outwash terraces are high, well-drained landforms, they are attractive locations for human occupation and are often found to contain archeological sites. If exposed for long periods of time, for
instance, during prolonged droughts, the sands of the Wisconsinan outwash can be susceptible to the formation of dunes and other eolian reworking. In this way, archeological sites may be buried and preserved within the landform.

**Upland Landform Model**

The upland landform model (Figure 4) used in this report is based on Ruhe’s (1969) analysis of hillslope evolution detailing the erosional and depositional sequences of upland components. Hillslopes are divided into five components (listed in descending order): summit, shoulder, sideslope, footslope, and toeslope. Not all components, however, may be present on a given hillslope.

Summits comprise the upper portion of the uplands and tend to be stable, but are subjected to minor deposition and erosion by eolian processes. Shoulders form by the gradual back cutting of hillslopes at summit margins and are generally convex in cross-section with a low degree of slope. Comprised of backslope, headslope, and noseslope subcomponents, sideslopes are erosional features formed by the back cutting of valley walls. Footslopes, the lower remnants of hillslopes, are eroded and often covered by colluvial deposits derived from the shoulder and backslope. Toeslopes are found at the base of the upland landform and consist almost entirely of colluvial deposits.

Due to their low degree of erosion and relative flatness, summits and shoulders have high potential for containing prehistoric sites that, at times, may be intact and shallowly buried. Footslope and toeslope areas also have a good prehistoric site potential because they represent depositional features (i.e., they are time transgressive in terms of stability), generally have a low degree of slope (Van Nest 1993), and may be relatively close to water. Sideslopes, because of their steeper inclines and higher rates of erosion, rarely contain intact prehistoric materials. Finally, historic archeological sites can be found on any upland landform component.

When using this model, it is important to account for agriculturally induced wind and water erosion. For example, all cultivated upland components have been subjected to erosional pressures. Consequently, summit, shoulder, footslope, and toeslope positions that have undergone decades of cultivation typically possess lower potential for intact sites.

**Project Area Soils and Landscape Analysis**

The following information presented below was obtained from the Soil Survey of Hardin County, Iowa (Voy 1982) and the Natural Resources Conservation Service (NRCS; 2006). The soils summarized in Table 1 are the series types mapped as potentially occurring within the project area (Figure 5).
<table>
<thead>
<tr>
<th>Symbol/Soil Name</th>
<th>Project Area %</th>
<th>Geomorphic Context</th>
<th>Drainage Class</th>
<th>Parent Material</th>
<th>Native Vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Okoboji silty clay loam, 0–1% slopes</td>
<td>6</td>
<td>Upland depressions</td>
<td>Very poor</td>
<td>Local alluvium</td>
<td>Water tolerant plants</td>
</tr>
<tr>
<td>Terril loam, 2–5% slopes</td>
<td>27B</td>
<td>Upland drainage ways and footslopes</td>
<td>Moderately well</td>
<td>Local alluvium</td>
<td>Mixed grass prairie</td>
</tr>
<tr>
<td>Nicollet loam, 1–3% slopes</td>
<td>55</td>
<td>Convex ridges, concave slopes of uplands</td>
<td>Somewhat poor</td>
<td>Loamy glacial till</td>
<td>Mixed grass prairie</td>
</tr>
<tr>
<td>Storden loam, 9–14% slopes</td>
<td>62D2</td>
<td>Upland knolls and convex slopes bordering waterways</td>
<td>Well</td>
<td>Glacial till</td>
<td>Mixed grass prairie</td>
</tr>
<tr>
<td>Clarion loam, 2–5% slopes</td>
<td>138B</td>
<td>Convex ridges and slopes of uplands</td>
<td>Well</td>
<td>Glacial till</td>
<td>Mixed grass prairie</td>
</tr>
<tr>
<td>Clarion loam, 5–9% slopes</td>
<td>138C2</td>
<td>Upland knolls and convex slopes bordering waterways</td>
<td>Well</td>
<td>Glacial till</td>
<td>Mixed grass prairie</td>
</tr>
<tr>
<td>Webster-Nicollet Complex, 1–3% slopes</td>
<td>329</td>
<td>Flats and in swales, along with low ridges and slopes of uplands</td>
<td>Poor, somewhat poor</td>
<td>Loamy glacial till</td>
<td>Prairie grasses and water tolerant plants</td>
</tr>
<tr>
<td>Clarion-Storden loam, 5–9% slopes</td>
<td>638C2</td>
<td>Knolls, convex ridges, and slopes of uplands overlooking waterways</td>
<td>Well</td>
<td>Glacial till</td>
<td>Mixed grass prairie</td>
</tr>
</tbody>
</table>

Within the project area there are eight upland soil types documented. The Okoboji silty clay loam, Terril loam, and the Webster-Nicollet complex soil types are associated with upland depressions, drainage ways/footslopes, and swales/flats respectively. These soils represent Woden member soils, which are comprised of colluviums and organic sediments found in depression features of the Des Moines lobe (Bettis et al. 1996). One type of Clarion loam (138C2), the Storden loam, and the Clarion-Storden loam are all associated with upland knolls, ridges, and slopes adjacent to and overlooking drainages. These soil types are representative of Dows formation upland landforms with higher degrees of slope. The Nicollet loam and one Clarion loam type (138B) are associated with upland ridges and slopes. These soil types represent Dows formation upland landforms with low degrees of slope.

Woden member soils account for 21.5% of the overall project area, and represent areas of low archeological potential because they are associated with wetlands. The Dows Formation upland soils associated with landforms immediately adjacent to and overlooking depressions and drainages with higher degrees of slope account for 36.0 % of the overall project area, and these soils represent areas with low archeological
potential. While not directly associated with wetlands these areas comprise the slopes adjacent to them and would be less likely to contain intact archeological deposits. The Dows Formation upland soils associated with ridges and slopes with lower degrees of slopes account for 42.5%, and represent areas with moderate archeological potential. These areas could have been used for temporary camps and resource acquisition.

A review of the topographic map (Figure 2) indicates that the project area resides on a gently undulating upland comprised of several knolls and small ridges surrounding a central depression. In general, the project area slopes down from west to east. More specifically, a knoll and small ridge system along the western edge of the project area slopes gently down to a swale/depression in the center of the project area. Along the eastern edge of the swale/depression, another knoll and small ridge system gently slope down to the east. The highest elevation within the project area is approximately 1,170 ft above the National Geodetic Vertical Datum (NGVD), and the lowest elevation is just below 1,140 ft. The areas with the highest archeological potential are located on the crest of the knolls and ridges overlooking the swales/depressions and the areas gently sloping away from them opposite the depression feature.

While soil survey and topographic map analyses are essential at the prefield level, field investigation is necessary to determine if the reported information from these sources is accurate. Because much of the soil survey information is documented without localized field inspection and landforms are constantly evolving, one must accurately document the current landscape to determine a given project areas archeological potential.

METHODS AND RESULTS

To facilitate data collection necessary for this investigation, two lines of research were conducted to assess the impact of the proposed rail development project on cultural resources. Both archival research and field survey were conducted under the guidelines commonly followed in Iowa (AIA 1999).

Archival Research

Prior to fieldwork, information regarding previously documented archeological sites as well as former surveys within or near the project area was obtained from the on-line resource managed by the Office of the State Archaeologist (OSA) in Iowa City. This archival search indicated that there were six previously recorded sites within a 1.6 km (1 mi) radius of the project area and that the project area had never been previously surveyed. Four documented archeological surveys had been carried out within 1.6 km (1 mi) of the project area, and two of the surveys identified archeological sites (Anderson 1997; Benton et al. 2000; Hotopp and Burnight 1978; Morrow 2009a).

The six previously recorded sites within 1.6 km (1 mi) of the project area are 13HA141, 13HA182, 13HA240, 13HA241, 13HA245, and 13HA421. Site 13HA141 was identified
during the course of a survey and was identified as a prehistoric open habitation site (Hotopp and Burnight 1978); the site is not eligible for the National Register of Historic Places (NRHP). Site 13HA182 was identified as a prehistoric isolated burial site; the site has not been evaluated for the NRHP (Green 1989). Sites 13HA240, 13HA241, and 13HA245 were all described as prehistoric open habitation sites; the sites have not been evaluated for the NRHP (Ulch 1974a; 1974b; 1974c). Site 13HA421 was originally identified during a Phase I survey based on three positive auger tests in a single straight line extending 22.5 meters (Morrow 2009a). The soil profiles in the auger tests appeared minimally eroded and disturbed. One large flake was recovered from 30–40 cm depth, and two other flakes were recovered. Subsequent Phase II testing was conducted in December 2009 with the excavation of six 1 x 1 m test units recovering a very sparse number of historic and prehistoric artifacts (Morrow 2009b). The portion of the site within the area tested was determined not eligible for the NRHP. However, the area tested possibly represents the extreme periphery of a much larger site, probably extending north and west of the project area (Morrow 2009b).

A General Land Office (GLO) map and plat maps (Gardner Map and Atlas Company 1903; GLO 1850; Midland Map Company 1916; Northwest Publishing Company 1892) along with aerial photos were reviewed (Figures 6–11). None of these show any historic cultural resources located within the project area. Likewise, the aerial photography shows that the area has been an agricultural field since at least 1939 (Figure 10).

While historic plat maps can provide a wealth of information regarding historic properties, structures may exist that were not recorded and those that are recorded can occur in a different location than that depicted. It is for these reasons that historic plat maps must be substantiated through field investigation.

Field Investigation

The field investigation included documenting local landforms through soil probing (n = 4) and a pedestrian survey (interval maximum of 15 m [49.2 ft]). The majority of the project area consisted of Dows Formation upland features, commonly knolls overlooking upland depressions (Figures 12–16). The rising upland features, especially the summit and shoulders, have some potential of containing archeological deposits. The remainder of the project area consisted of low-lying Woden Member landforms; upland depression features, have low potential of containing archeological deposits (Figure 16). These landforms typically have low archeological potential because they represent poorly drained wetland areas, although small resource procurement sites can occur along the margins of these wetland areas. The investigation resulted in no prehistoric archeological artifacts or sites being found within the project area. The results of the soil profiles documented in the field are described below. The profile of soil probe 3 is not described as it was taken on a similar landform and was similar in nature to Soil Profile 1.

DESIGNATION: Soil Profile1
LANDSCAPE POSITION: upland summit/knoll
SLOPE: 0–2%
METHOD: soil probe
VEGETATION: plowed agricultural field; 90% ground surface visibility (GSV)
DESCRIBED BY: JAL
DATE: 4/8/2013
REMARKS: This soil profile was taken at the highest point within the northwestern quarter of the project area. The landform was an upland summit/knoll situated on a relatively level area overlooking a depression to the east and was determined to be part of the Dows Formation. Due to continuous farming activity, the A horizon is no longer present. This location has low potential for intact archeological resources.

<table>
<thead>
<tr>
<th>Depth (cm)</th>
<th>Soil Horizon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–22</td>
<td>Ap</td>
<td>Very dark grayish brown (10YR 3/2) sandy loam; weak, fine granular structure; friable; clear boundary.</td>
</tr>
<tr>
<td>22–45</td>
<td>Bw1</td>
<td>Brown (10YR 4/3) sandy loam; weak, fine subangular blocky structure; friable; gradual boundary.</td>
</tr>
<tr>
<td>45–60</td>
<td>Bw2</td>
<td>Dark yellowish brown (10YR 4/6) sandy loam; weak, fine subangular blocky structure; friable; gradual boundary.</td>
</tr>
<tr>
<td>60–71+</td>
<td>BC</td>
<td>Dark yellowish brown (10YR 4/6) loamy sand; weak, subangular blocky structure; friable. Some rock found throughout. End.</td>
</tr>
</tbody>
</table>

DESIGNATION: Soil Profile 2
LANDSCAPE POSITION: upland depression, Woden Member landform
SLOPE: 0–2%
METHOD: soil probe
VEGETATION: agricultural field; 90% GSV
DESCRIBED BY: JAL
DATE: 4/9/2013
REMARKS: This soil profile was taken at a low point in a relatively level depression near the center of the project area overlooked by several knolls to the west and east. This upland depression was determined to be part of the Woden member of the Dows Formation and prior to draining was perennially wet, allowing for the development of the observed gleyed soil. This location has low potential for archeological resources.

<table>
<thead>
<tr>
<th>Depth (cm)</th>
<th>Soil Horizon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–21</td>
<td>Ap</td>
<td>Black (10YR 2/1) loam; weak, fine granular structure; friable; clear boundary.</td>
</tr>
<tr>
<td>21–38</td>
<td>A</td>
<td>Black (10YR 2/1) loam; weak, fine granular structure; friable; gradual boundary.</td>
</tr>
<tr>
<td>38–44</td>
<td>Bw</td>
<td>Black (N 2.5) clay loam; weak, fine subangular blocky structure; plastic; gradual boundary.</td>
</tr>
<tr>
<td>44–56</td>
<td>BCg</td>
<td>Greenish black (10YR 2.5/1) clay loam; weak, subangular blocky structure; friable; gradual boundary.</td>
</tr>
<tr>
<td>56–75+</td>
<td>Cg</td>
<td>Dark greenish grey (10Y/1) mottled with light yellowish brown (10YR 6/4) sandy loam; weak, subangular blocky; friable. End.</td>
</tr>
</tbody>
</table>

DESIGNATION: Profile 4
LANDSCAPE POSITION: upland flat
SLOPE: 0–2%
METHOD: soil probe  
VEGETATION: agricultural field; 90% GSV  
DESCRIBED BY: JAL  
DATE: 4/8/2013  
REMARKS: This soil profile was taken on an upland flat in the southeastern quarter of the project area consisting of a broad relatively level area bordered by shallow depressions and a series of rises to the west and JJ Avenue to the east. This upland flat was determined to be part of the Dows Formation and has low to moderate potential for intact archeological resources.

<table>
<thead>
<tr>
<th>Depth (cm)</th>
<th>Soil Horizon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–21</td>
<td>Ap</td>
<td>Black (10YR 2/1) sandy clay loam; weak, fine granular structure; friable; clear boundary.</td>
</tr>
<tr>
<td>21–26</td>
<td>A1</td>
<td>Black (10YR 2/1) sandy clay loam; weak, fine subangular blocky structure; friable; gradual boundary.</td>
</tr>
<tr>
<td>26–39</td>
<td>A2</td>
<td>Very dark grayish brown (10YR 3/2) clay loam; weak, fine subangular blocky structure; slightly plastic; gradual boundary.</td>
</tr>
<tr>
<td>39–65</td>
<td>Bw</td>
<td>Brown (10YR 4/3) clay loam; weak, fine subangular blocky structure; slightly plastic; gradual boundary.</td>
</tr>
<tr>
<td>65–75+</td>
<td>BC</td>
<td>Olive brown (2.5Y 4/4) sandy clay loam; weak, fine subangular blocky structure; slightly plastic. End.</td>
</tr>
</tbody>
</table>

Based on the landform and soil analysis, discussed above, the highest probability for encountering archeological sites exists on the higher upland surfaces, along knolls and rises, and along the slightly lower upland flats found throughout the project area (Soil Profiles 1 and 4). However, the upland summits within the project area are eroded from continued agricultural use and have an overall low probability of containing intact archeological sites. Within the upland depressions (Soil Profile 2), there is a low probability of finding intact archeological deposits because prior to the draining of these features for agricultural purposes these areas would have been wetlands.

RECOMMENDATIONS AND CONCLUSIONS

BCA has conducted a Phase I cultural resources inventory for the proposed Iowa Falls Development Corporation rail development area. This inventory was produced via pedestrian survey supplemented by soil probe coring ($n = 4$). The examined project area consisted of low-lying wetland and upland glacial deposits now in use as an agricultural field. While drainage is somewhat poor in certain areas, tile draining of the entire area produced an artificially dry environment. Prehistorically, the project area would have been spotted with wetland areas with several island-like features. This environment would not have been desirable for human occupation or habitation, except for very small procurement sites around the perimeter of the wetlands and atop the upland landforms.

Archival research conducted prior to the investigation showed six previously recorded sites and four previous surveys within 1.6 km (1 mi) of the APE. None of the previously recorded sites or previously conducted surveys are within the current project area.
Historic maps, historic plats, and aerial photography, all indicated that no cultural resources were present within the project area. The landforms within the project area were assessed using NRCS soil survey information, topographic maps, and LiDAR images along with the documenting of local landforms through soil probing ($n = 4$) during the field investigation. The entire project area was a plowed agricultural field with 90% GSV and a pedestrian survey was conducted during the field investigation. No archeological sites were found within the project area. BCA recommends no further cultural resources work for the proposed Iowa Falls Area Development Corporation rail development area.

No technique of modern archeological research is adequate to identify all archeological sites or cultural deposits within a given area. In the event that any cultural resource materials not identified and recorded by this investigation are encountered during the implementation of the proposed activities, the Bureau of Historic Preservation should be contacted immediately. The developer is responsible for protecting cultural resources from disturbance until a professional examination can be made or until authorization to proceed is granted by the State Historic Preservation Office or a designated representative.
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Van Nest, Julieann  

Voy, Kermit D.  
FIGURES
Figure 1. Physiographic location of the project area (adapted from Prior [1991:31]).
Figure 2. Topographic coverage of the project area.
Figure 3. Scale map of the project area.
Figure 4. Diagram of potential landform components (adapted from Ruhe [1969]).
Figure 5. Soil map of the project area (NRCS 2006).
Figure 6. 1850 map of the project area (GLO).
Figure 7. 1892 map of the project area (Northwest Publishing Company).
Figure 8. 1903 map of the project area (Gardner Map and Atlas Company).
Figure 9. 1916 map of the project area (Midland Map Company).
Figure 10. 1939 aerial photograph of the project area.
Figure 11. 1958 aerial photograph of the project area.
Figure 12. Coverage of the project area. View to the northeast (4/8/13).

Figure 13. Coverage of the project area. View to the southeast (4/8/13).
Figure 14. Coverage of the project area. View to the southwest (4/8/13).

Figure 15. Coverage of the project area. View to the northwest (4/8/13).
Figure 16. Coverage of the central upland depression. View to the east (4/8/13).
APPENDIX A
National Archaeological Database Form
**1. R and C #:**

**2. Authors:** Langseth, Jared A., and David G. Stanley

**Year of Publication** 2013

**3. Title** Intensive Phase I Archeological Survey of a Proposed Rail Development Area, Hardin Township, Hardin County, Iowa

**4. Report**

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<th>NTIS:</th>
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<td>Volume #:</td>
<td></td>
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<tr>
<td>Publisher:</td>
<td>Bear Creek Archeology, Inc.</td>
<td></td>
</tr>
<tr>
<td>Place:</td>
<td>Cresco, Iowa 52136</td>
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**5. Unpublished**

| Sent From: | |
| Sent To: | |
| Contract #: | |

**6. Federal Agency:**

**7. State:** Iowa  
**County:** Hardin  
**Town:**

**8. Work Type:**

| 0 - Types of Resources / Features | 1 - Generic terms / Research Questions |
| 2 - Taxonomic Names | 3 - Artifact Types / Material Classes |
| 4 - Geographic Names / Locations | 5 - Time Periods |
| 6 - Project Names / Study Unit | 7 - Other Key Words |

| No cultural resources | [0] |
| Des Moines Lobe | [4] |
| Glacial landforms | [7] |
| Wetland | | |
| 22.6 ha (55.8 ac) | [7] |

**9. Keyword:**

| 10. UTM Zone: | 15 Easting: | Northing: |
| 15 Easting: | | |
| 15 Easting: | | |
| 15 Easting: | | |

| Township: | Range: |
| 89N | 21W |
| | | |
Other Publication Types:
12. Monographs:
   Name: ____________________________
   Place: ____________________________

13. Chapter:
   In: _________  First: _________  Last: _________

14. Journal:
   Volume: _________  Issue: _________  First: _________  Last: _________

15. Dissertation:
   Degree: Ph.D.  LL.D.  M.A.  M.S.  B.A.  B.S.  Institute: ________________

16. Paper:
   Meeting: ____________________________
   Place: ____________________________  Date: ________________

17. Other:
   Reference Line: ____________________________

18. Site #:
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19. Quad Map:
   Name: Iowa Falls West, Iowa  Date: 1979
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