

V. FIELD INVESTIGATIONS

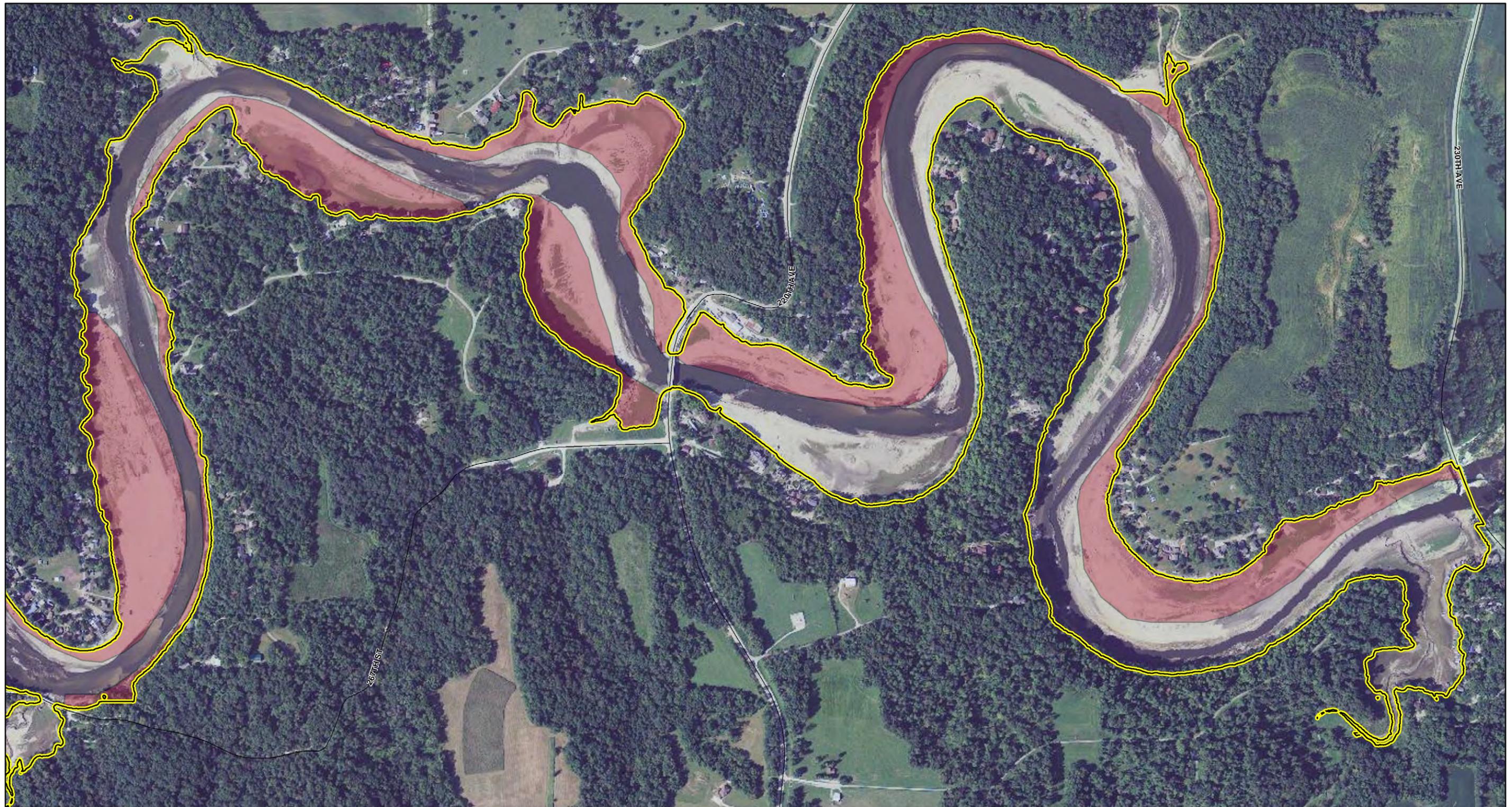
A. PHASE I RECONNAISSANCE

On September 28-30, 2011, LBG conducted Phase I reconnaissance surveys for selected portions of the study area (Figures 9a-9c). The field survey was performed by the author with assistance from Field Archaeologist Sam Williams and was designed to inspect landforms considered to have high potential for unreported archaeological sites. The survey also gathered information on the nature of valley landforms and local geology, patterns of land use and landscape/shoreline modification, and the nature and extent of damage to valley landforms and archaeological resources caused by catastrophic flooding. LBG was given access to the entire study area but was instructed to respect private property beyond the lake shoreline. Public roads and boat ramps provided preferred access points to the lakebed although LBG also gained access to portions of the study area via private property with the consent of local landowners. Public road access was limited to the valley crossings at 220th Avenue, the Turtle Creek Recreation Area along 267th Street, and County Road X31 (which of course remained closed at the Delhi Dam). Boat ramp access was utilized at Linden Acres, Maples and the Cedars (see Figure 2).

Point bar locations with full glacial and early Holocene landforms were the primary focus of the field survey. Surveyors also traversed the steep-sided slopes of outside meanders to inspect the valley walls for potential cave formations and rockshelters along the former shoreline. Eroded surfaces and cutbanks were closely inspected for artifacts, archaeological features and other archaeological materials (e.g., burned rock, charcoal, animal bone, shell concentrations, etc.); however, the field survey was ultimately performed in a largely opportunistic and unsystematic fashion due to the presence of thick and extensive overwash deposits on many of the open terrace landforms and the presence of dense weedy vegetation covering most low lying areas that hid potential resources from view in most places. For this reason, the survey results presented below should not be considered to represent a complete inventory of the archaeological resources present within the study area. To the contrary, we did not examine every landform within the study area that might be considered to have potential for unreported archaeological sites. More importantly, our investigation confirms that there are many Holocene-age landforms within the study area that have geological potential to include buried archaeological deposits that could only be detected through subsurface exploration. As a result and for these reasons, the current investigation is best viewed as a preliminary effort in information gathering designed to provide project planners and agency reviewers with a more complete basis for making future decisions regarding long-term management of the area's known and potential archaeological resources. Some recommendations for future planning are presented in the next chapter.

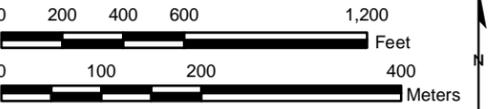
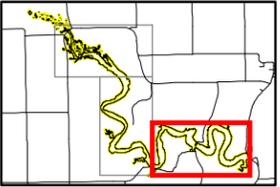
General Observations

Photos taken shortly after the July 24, 2010 breach event at Lake Delhi show a largely barren landscape of sand and mud littered with boat cradles, boat docks and other debris. The survey described here was performed about 14 months after the event and during the interim nature did its best to reclaim the exposed lakebed. Most low-lying areas within the drained valley were blanketed with a thick layer of silt that represented fertile ground for pioneering weedy plants. At the time of our survey, these locations were completely covered with a thick tangled growth of weedy vegetation about three to four feet tall. Higher terraces tended to have less vegetation, partly because they were covered by less fertile sand deposits but also because some landowners were making efforts to cut it back where possible. Even so, all but the most sandy land surfaces were also becoming overgrown by vegetation (Plates 8-13).



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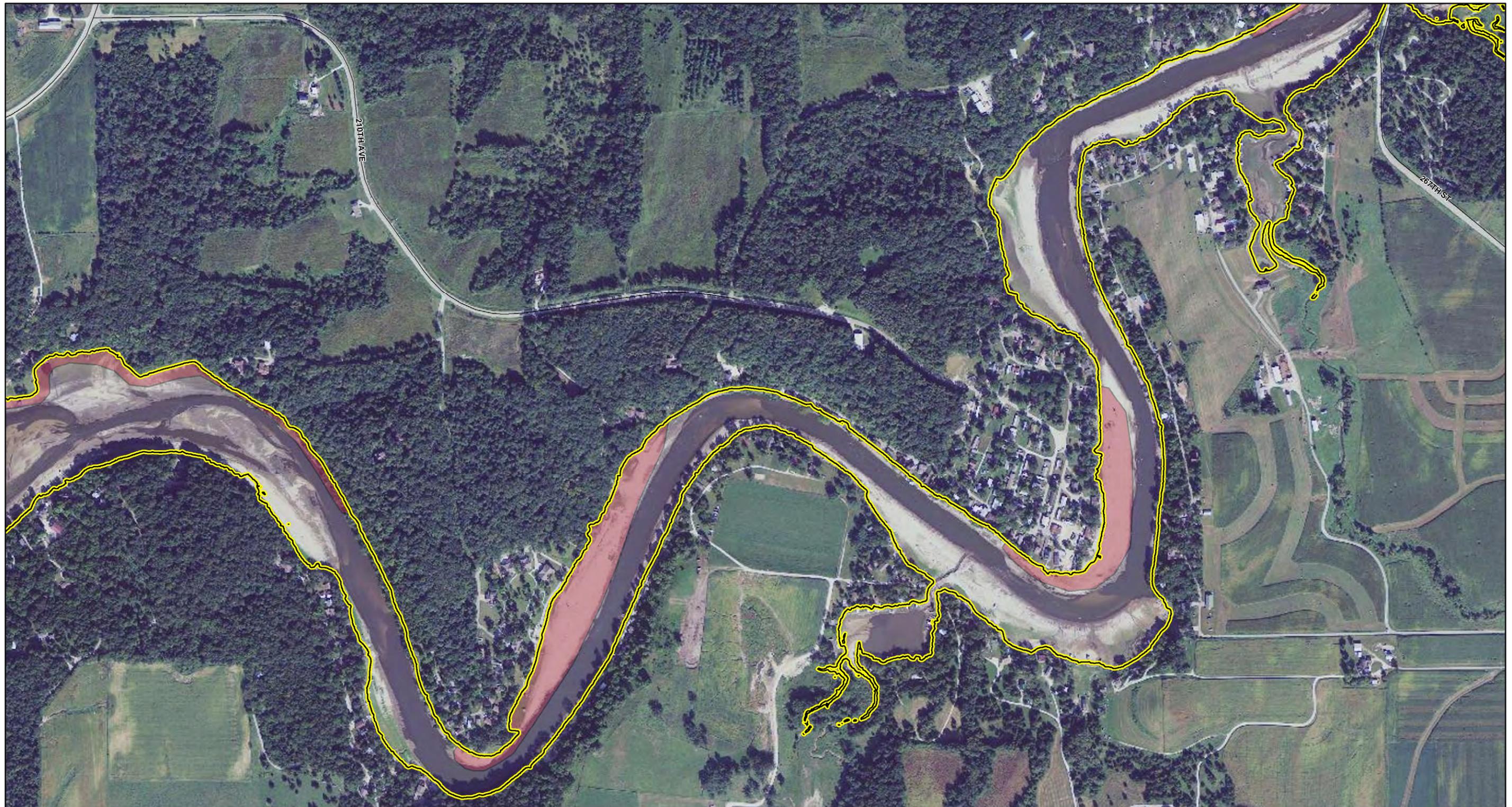
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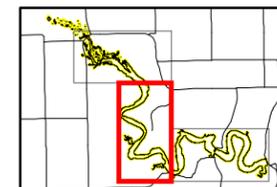
FIGURE 9a: Area Surveyed

SOURCE: ISU 2010



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- APE
- Areas Surveyed



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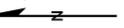
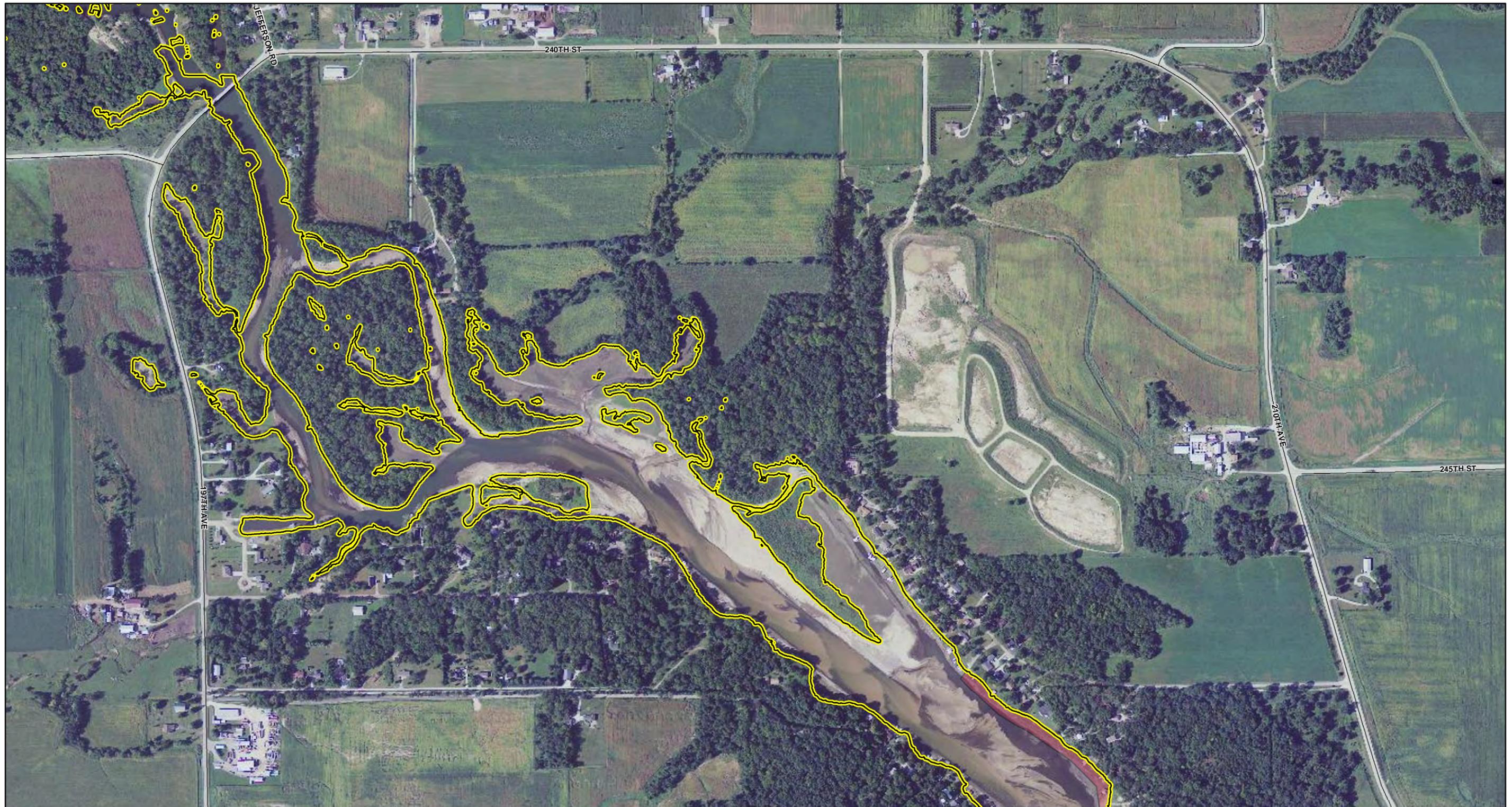


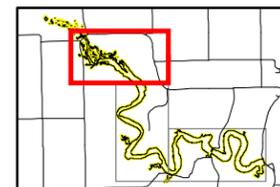
FIGURE 9b: Area Surveyed

SOURCE: ISU 2010



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- APE
- Areas Surveyed



The Louis Berger Group, Inc.

FIGURE 9c: Area Surveyed

SOURCE: ISU 2010



Plate 8. Vegetation Obscures the Lakebed Above Delhi Dam. View downstream.



**Plate 9. Hartwick Terrace Downstream from the 220th Avenue Bridge.
(Note new riffle structures and rip-rap material installed during the fall of 2010).**



Plate 10. Sand deposits on the Holocene terrace below Linden Acres. View upstream.



Plate 11. Sand Deposits Cover the Holocene Terrace at Clearview Acres. View downstream.



Plate 12. Sand and vegetation on the Holocene terrace below the Maples. View downstream.



Plate 13. View looking upstream toward the Cedars.

The Maquoketa River valley of course continues to be a very active environment with areas of significant erosion and deposition of alluvial materials. The thick layers of recent sediment described above greatly limited our ability to locate artifacts and other evidence of archaeological deposits within the valley. Meandering streams tend to deposit larger particles like sand and pebbles along the inside edge of point bars -- the points of land that form the inside of the stream meander -- and over the past eight decades some of these deposits have accumulated in significant quantities. A cursory review of recent aerial photographs of the valley shows this pattern very clearly with large splays of light-colored sand spreading downstream below every point bar. These modern overwash deposits obviously bury and conceal the native surface of terrace landforms throughout the study area and thereby greatly diminish the likelihood of detecting any archaeological deposits without subsurface testing.

We also observed places that have been subject to erosion in the past and others that continue to be actively eroded. The most significant erosion continues to occur along the river channel itself. As mentioned above, concerns about the amount of sediment being carried downstream as the river began to reclaim its historic channel prompted the installation of erosion control structures within the channel at both Hartwick and Delhi dam locations in the fall of 2010 (see Plate 9). The most serious channel and stream bank erosion continues to occur in this lower section of the study area where the gradient is most steep and valley slopes have not yet stabilized. The south or right bank just below the Hartwick bridge is one area in particular where the river continues to cut laterally against high terrace landforms and where stream bank erosion has potential to impact potentially significant archaeological deposits associated with sites 13DW125 and 13DW126 (see Plate 4). Elsewhere in the study area outside meanders are largely constrained by bedrock with the result that there are virtually no exposed vertical cut banks along the river channel upstream from Hartwick.

Sheet erosion along with rill and gully erosion is also developing on many of the high terrace slopes from a point beginning about one-half mile above the Hartwick bridge downstream to the Delhi Dam (Plates 14, 15). The damage is caused by normal rainfall and sheet erosion on unprotected surfaces, but the problem is also exacerbated or amplified in many places by stormwater runoff from nearby homes and other developments above the shoreline. In many places, stormwater that was once diverted by drain tile or landscaping directly into the lake is now being drained onto the surface of the exposed terrace landforms. In places where this surface is unprotected, we observed many rills and large gullies developing along the terrace edge. In several places we found gullies like these cutting through what appear to be potentially significant archaeological deposits (e.g., Site 13DW133).

B. SURVEY RESULTS

LBG identified eight new archaeological sites within the study area. Together with the four sites reported by WVA archaeologists near Hartwick in 2010, there are currently a total of 12 known archaeological sites within the study area (Table 4). Use of the valley by prehistoric Native American cultures is evidenced at 10 of the 12 sites and includes eight probable habitation sites (7 open sites, 1 rockshelter), one lithic resource procurement location, and one fishweir. Mid-19th century building foundations are represented at two separate locations near the former townsite of Hartwick and are believed to be associated with the historic settlement that once existed at that location. Fragments of contemporaneous historic artifacts were also identified at two other nearby locations. A map depicting the locations of these sites along with copies of associated site forms are provided in a separate volume (Volume II) in recognition of legal restrictions regarding the public disclosure of confidential site location information.



Plate 14. Gullies formed by storm water runoff near Hickory Hollow



Plate 15. Gully erosion along the point bar terrace at Deer Run below Hartwick. View to south.

Table 4. List of Known Archaeological Sites Within the Study Area

SITE NUMBER	SITE TYPE	CULTURAL & TEMPORAL ASSOCIATIONS	ESTIMATED DIMENSIONS
13DW123	Artifact Scatter	Middle Woodland (2200-1650 BP) Late Prehistoric (800-300 BP) Historic (AD 1855-1907)	140 x 20 meters
13DW124	Habitation	Undetermined Prehistoric	130 x 30 meters
13DW125	Stone Foundation	(AD 1855-1907)	10 x 10 meters
13DW126	Resource Procurement (prehistoric); Artifact Scatter (historic)	Archaic (10,000-2800 BP) Historic (AD 1855-1907)	160 x 60 meters
13DW133	Habitation	Early to Middle Woodland (2800-1500 BP)	130 x 50 meters
13DW134	Habitation	Middle Woodland (2500 to 1650 BP)	100 x 20 meters
13DW136	Stone Foundation (Hartwick Saw Mill)	Historic (AD 1849-1907)	20 x 20 meters
13DW137	Habitation	Undetermined Prehistoric	30 x 10 meters
13DW138	Artifact Scatter	Undetermined Prehistoric	30 x 10 meters
13DW139	Artifact Scatter	Undetermined Prehistoric	30 x 15 meters
13DW140	Fish Weir	Undetermined Prehistoric	20 x 20 meters
13DW141	Rockshelter	Undetermined Prehistoric	20 x 20 meters

Site 13DW123

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Artifact Scatter
Cultural/Temporal Association:	Prehistoric (Middle Woodland, 2200-1650 BP; Late Prehistoric 800-300 BP); Historic (Hartwick Townsite, circa AD 1855-1907)
Site Size:	20 Meters (N-S) X 140 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None by LBG; Reported by Finn and Morrow 2010; WVA Collection included: Middle Woodland Ceramic, 3 Bifaces, 4 Debitage, Scapula Hoe (Late Prehistoric), Bottle Glass, Window Glass, Cut Nails, Horseshoe, 19 th Century Dinnerware, Brick Fragments
Cultural Materials Observed:	LBG did not reinvestigate this site
Landform:	High Terrace & Holocene Terrace
Elevation:	890-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 2-9% Slopes
Site Disturbance:	Soil Erosion; Gullied Slope
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW123 was identified by WVA in the fall of 2010 based on a scatter of prehistoric and historic period artifacts observed along an eroded terrace slope. The artifact scatter consists primarily of fragmented historic period items that include several varieties of glazed stoneware and decorated whiteware ceramics (blue feather and shell-edge, blue, purple and flow blue transfer print, blue sponge-decorated, annular/banded), olive and aqua bottle glass, window glass, and machine-cut nails. All of these items are consistent with manufacture and use dates during the mid-19th century and suggest the presence of a probable domestic use context associated within the Hartwick townsite. A relatively smaller number of prehistoric chipped-stone, ceramic, and bone artifacts were also observed and collected by WVA. These items included a grit-tempered pottery fragment with Middle Woodland characteristics, 3 bifaces, and a bone tool that was identified by WVA as a possible garden hoe manufacture from part of a bison scapula. The bone tool had been modified in a manner that suggested possible association with the later prehistoric Oneota culture (Toby Morrow, personal communication, November 7, 2011). No subsurface tests have been excavated at the site which is believed to extend above the shoreline onto the adjacent terrace.

LBG did not reinvestigate this site and the site remains unevaluated for listing in the NRHP. Based on the observations recorded by WVA, LBG recommends that additional archaeological investigations be conducted to more fully define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW123, including site areas that may extend above the anticipated shoreline elevation of 897 feet amsl.

Site 13DW124

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Artifact Scatter
Cultural/Temporal Association:	Prehistoric (undefined)
Site Size:	20 Meters (N-S) X 100 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None by LBG; Reported by Finn and Morrow 2010; WVA Collection included: 2 Bifaces, 1 utilized flake, 27 Debitage, 1 greenstone axe/celt blank
Cultural Materials Observed:	LBG observed several hundred pieces of additional chipped stone debitage at the site but did not collect them.
Landform:	High Terrace & Holocene Terrace
Elevation:	885-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 0-2% Slopes; Bertrand silt loam, 0-2% Slopes
Site Disturbance:	Soil Erosion; Gullied Terrace and Terrace Slope
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW124 was first reported by WVA in the fall of 2010 based on a scatter of both prehistoric and historic period artifacts and a historic building foundation situated on an eroded river terrace. The building feature was described as a stone foundation measuring 4x6 meters with few associated artifacts. The overall site size was estimated as measuring 60 meters (NW-SE) by 25 meters (SW-NE) which encompassed the more extensive prehistoric artifact scatter.

LBG visited this site on September 29, 2011 and relocated, mapped and photographed the building foundation. LBG archaeologists also identified additional prehistoric artifacts outside the previously reported site boundary which almost doubled the estimated length of the total site area. Based on our field observations, we proposed that the Office of the State Archaeologist consider recording the historic building foundation and the prehistoric artifact scatter as two separate sites since the deposits were close together but did not overlap. The OSA Site Records coordinator (Eck) agreed to assign a new number to the building foundation (13DW136) but recommended that 13DW124 be cross-referenced on the new site record. Site 13DW124 now refers only to the prehistoric artifact scatter at this location.

WVA archaeologists collected a total of 31 prehistoric artifacts from the surface of this site in the fall of 2010 including: two chipped-bifaces, one utilized flake, 27 pieces of debitage or chipping debris, and one percussion-flaked greenstone axe/celt blank. The greenstone artifact was actually found resting on the nearby building foundation and was presumed abandoned there by someone who most likely collected it nearby (Toby Morrow, personal communication, November 7, 2011).



Plate 16. Chipped-Stone Artifacts Exposed on the Eroded Surface of Site 13DW124.

LBG did not collect any additional material from the surface of the site but observed several concentrations of chipped-stone artifacts exposed on the ground surface extending as much as 50 meters north of the site boundary reported by WVA. In each instance, the artifacts appeared to be in-situ and were pedestaled on otherwise eroded subsoil (B horizon) deposits (Plate 16). No modified specimens, tools, or other temporally diagnostic artifacts were observed at the site. Other downstream portions of the site appeared to have experienced less sheet erosion and still retained what appeared to be an intact A horizon; however, surface erosion has progressed to the point where rills and gullies have developed through these deposits, in some places well into subsoil.

No subsurface tests have been excavated at the site which is believed likely to extend above the shoreline onto the adjacent terrace. The site remains unevaluated for listing in the NRHP. Based on the field observations summarized above, LBG recommends that additional archaeological investigations be

conducted to more fully define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW124, including site areas that may extend above the anticipated shoreline elevation of 897 feet amsl.

Site 13DW125

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Building Foundation
Cultural/Temporal Association:	Historic (Hartwick Townsite, circa AD 1855-1907)
Site Size:	10 Meters (N-S) X 10 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None by LBG; Identified by Finn and Morrow 2010; WVA did not collect the site
Cultural Materials Observed:	LBG did not reinvestigate this site;
Landform:	Holocene Terrace
Elevation:	885-890 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Terrace (90-100% Surface Visibility)
Soil Type:	Bertrand silt loam, 0-2% Slopes
Site Disturbance:	Soil Erosion; Sheet Erosion
Relation To Study Area:	Site is Located 100% Within the Study Area
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing



Plate 17. Exposed Building Foundation at 13DW125. (Reproduced from Finn and Morrow 2010).

Site 13DW125 was identified by WVA in the fall of 2010 based on the discovery of a square stone-foundation with brick-wall superstructure. The foundation appeared to have been exposed by floodwaters that scoured overlying sediments from the area. The stone foundation was constructed with cut blocks of

local dolomite and measured approximately six meters by six meters in size. A substantial number of bricks interpreted to be collapsed walls were observed on all sides of the foundation. A small cast-iron stove was observed inside the structure, but no other associated artifacts were observed around the building. WVA speculated that archaeological deposits outside the building foundation were likely removed by floodwaters but that some deposits may still exist within the interior.

LBG did not reinvestigate this site and the site remains unevaluated for listing in the NRHP. Based on the observations recorded by WVA, LBG recommends that additional archaeological investigations be conducted to more fully define the nature and extent of the archaeological deposits present at 13DW125.

Site 13DW126

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Resource Procurement (Lithic); Artifact Scatter
Cultural/Temporal Association:	Prehistoric (Archaic, 10,000-2,800 BP) Historic (Hartwick Townsite circa 1855-1907)
Site Size:	60 Meters (N-S) X 160 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None by LBG; Identified by Finn and Morrow 2010; WVA Collection included: 1 Merom-type projectile point, 1 point mid-section, 9 Bifaces, 1 hammerstone, 152 Debitage and a burned rock concentration plus 12 Bottle Glass, 12 Window Glass, 4 Cut Nails, 24 fragments of 19 th Century ceramic, Brick Fragments, 1 deer bone
Cultural Materials Observed:	LBG did not reinvestigate this site
Landform:	High Terrace
Elevation:	890-895 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (90-100% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 0-2% Slopes
Site Disturbance:	Soil Erosion
Relation To Study Area:	Site is Located 100% Within The Study Area.
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW126 was identified by WVA in the fall of 2010 based on the discovery of prehistoric and historic period artifacts an eroded river terrace. The majority of the site material is associated with prehistoric Native American use of the area as an apparent resource procurement site focused on the collection and early stage processing of Hopkinton Formation chert. Morrow feels that the overall assemblage is consistent with an Early Archaic tool kit (Toby Morrow, personal communication, November 7, 2011). He noted the presence of large thinning flakes produced during reduction of large bifaces as well as several bifaces with similar proportions. He also noted that one unfinished biface collected from the site has a distinctive “plano-convex” cross-section suggesting that the original intent may have been to fashion it into a chipped-stone adze, a tool type that has strong Early to Middle Archaic associations elsewhere in Iowa (e.g., Fiedel et al. 2004). In addition to these hints of an Early Archaic presence at 13DW126, WVA collected a single Late Archaic Merom-style projectile point (3600-3000 years BP; Justice 1987:132) from the site and also reported a concentration of burned rock suggesting potential for hearth-like archaeological features that may be associated with these early site components.

WVA also reported finding a light scatter of historic period materials across the site. Temporally diagnostic items found at the site include machine-cut nails and a variety of decorated whiteware

ceramics (i.e., hand-painted, light blue, brown and purple transfer-printed, blue sponge-decorated). Other historic items collected from the site included: bottle glass, window glass, and fragments of brick. All of these items are consistent with manufacture and use dates during the mid-19th century and suggest the presence of a probable domestic use context nearby that is associated with the Hartwick townsite. No subsurface tests have been excavated at the site.

LBG did not reinvestigate this site and the site remains unevaluated for listing in the NRHP. Based on the observations recorded by WVA including the presence of early prehistoric materials, temporally diagnostic artifacts, and potential for undisturbed prehistoric hearth features, LBG recommends that additional archaeological investigations be conducted to more fully define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW126.

Site 13DW133

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Habitation
Cultural/Temporal Association:	Prehistoric (Middle Woodland)
Site Size:	50 Meters (N-S) X 130 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	Waubesa Contracting Stem Projectile Point; returned to landowner
Cultural Materials Observed:	3 Bifaces, 4 Debitage,
Landform:	High Terrace
Elevation:	890-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 0-2% Slopes
Site Disturbance:	Soil Erosion; Gullied Slope
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW133 was identified by LBG based on field investigations performed on September 28, 2011. The site is represented by a moderate scatter of prehistoric chipped-stone tools, bifaces and other by-products of stone-tool manufacture on the exposed surface of a high terrace overlooking the Maquoketa River. Chipped-stone artifacts were observed on the exposed surface of the terrace and in erosional gullies that had developed along the outer margins of the terrace slope. One of these, a small contracting stem projectile point (cf., Waubesa Contracting Stem) is diagnostic of Early to Middle Woodland period (2800-1500 years BP) assemblages in eastern Iowa. The specimen from 13DW133 is unusual in that it was manufactured from a tan or brownish variety of Cambrian-age Hixton silicified sandstone which is derived from bedrock sources in Jackson County, Wisconsin near Black River Falls. A small fragment of another finished biface was also observed at the site. This appeared to be manufactured from a light-colored Mississippian-age (Burlington Formation) chert most likely derived from sources in southeast Iowa. The overwhelming majority of specimens were otherwise made from a translucent gray variety of Hopkinton chert which is locally abundant in both bedrock sources and secondary outwash deposits. The latter included a wide range of early reduction bifaces, primary shaping flakes and biface thinning flakes. A concentration of unmodified limestone/dolomite cobbles was observed near the center of the site. The rock concentration must have a cultural origin because stones of this size would not occur naturally in this geologic context, but its purpose or function was not obvious or apparent. No bone or artifacts were observed in direct association with the feature and there was no visible indication of any soil staining or

discoloration that might indicate that it was part of a fill deposit. Nonetheless, it may warrant treatment as a cultural feature (additional photos are provided in Appendix C).



Plate 18. Chipped-Stone Artifacts from Site 13DW133.

No subsurface tests have been excavated at the site. Artifacts were observed near the outer margin of the terrace and were also observed close to the former shoreline and there is a very high likelihood that they are more extensive than reported here, i.e., there is high potential for the site deposits to extend onto the adjacent terrace landform above the shoreline. Portions of the site, particularly areas near the outside terrace margin are being severely eroded by stormwater runoff that is creating deep rills and gullies through the site deposits including areas immediately adjacent to the cultural feature described above.

Site 13DW133 remains unevaluated for listing in the NRHP; however, the presence of temporally diagnostic artifacts, high artifact density, evidence for the use of non-local raw materials, and the likely presence of undisturbed cultural features indicates that the site deposits have potential to be considered for National Register eligibility. Based on these observations LBG recommends that additional archaeological investigations be conducted to more fully define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW133, including site deposits that may extend above the anticipated shoreline elevation of 897 feet amsl. These investigations should include consultation with the Office of the State Archaeologist regarding an appropriate methodology for investigating the rock feature observed at the site.

Site 13DW134

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Artifact Scatter
Cultural/Temporal Association:	Prehistoric (Middle Woodland)
Site Size:	20 Meters (N-S) X 100 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None
Cultural Materials Observed:	Manker Corner Notched and Dickson Contracted Stem projectile points, finished biface fragments, early-stage biface blanks, primary shaping and biface thinning debitage.
Landform:	High Terrace
Elevation:	890-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 2-9% Slopes
Site Disturbance:	Soil Erosion; Gullied Slope
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW134 was identified by LBG based on field investigations performed on September 29, 2011. The site is represented by a moderate scatter of prehistoric chipped-stone tools, bifaces and other by-products of stone-tool manufacture on the exposed surface of a high terrace overlooking the Maquoketa River. Chipped-stone artifacts were observed on the exposed surface of the terrace and in erosional gullies that had developed along the outer margins of the terrace slope. Two broken projectile point discovered on the surface of the site indicate that it was occupied during the Middle Woodland period (2500-1650 years BP). The two specimens resemble Manker corner-notched and Dickson contracting stem types. The overwhelming majority of chipped-stone artifacts appeared to be made from locally available varieties of Hopkinton chert which seemed to be particularly abundant in the high terrace outwash deposits downslope from the site. A high percentage of the chipped-stone material observed at the site also appeared to be heat-altered or heat-treated giving these specimens a distinctive oxidized color (i.e., orange to red) compared with untreated gray specimens. This process is thought to have been applied to improve the fracture qualities of the local stone and is often applied to late-stage biface specimens prior to final thinning and edge finishing.

No subsurface tests have been excavated at the site. Artifacts were observed near the outer margin of the terrace and were also observed close to the former shoreline and there is a very high likelihood that they are more extensive than reported here, i.e., there is high potential for the site deposits to extend onto the adjacent terrace landform above the shoreline. Portions of the site, particularly areas near the outside terrace margin are being severely eroded by stormwater runoff that is creating deep rills and gullies through the site deposits. The surface soil at this site has been eroded over time and appears to be very thin if not altogether absent. Subsurface testing is needed to better evaluate the present condition of the site deposits at 13DW134.

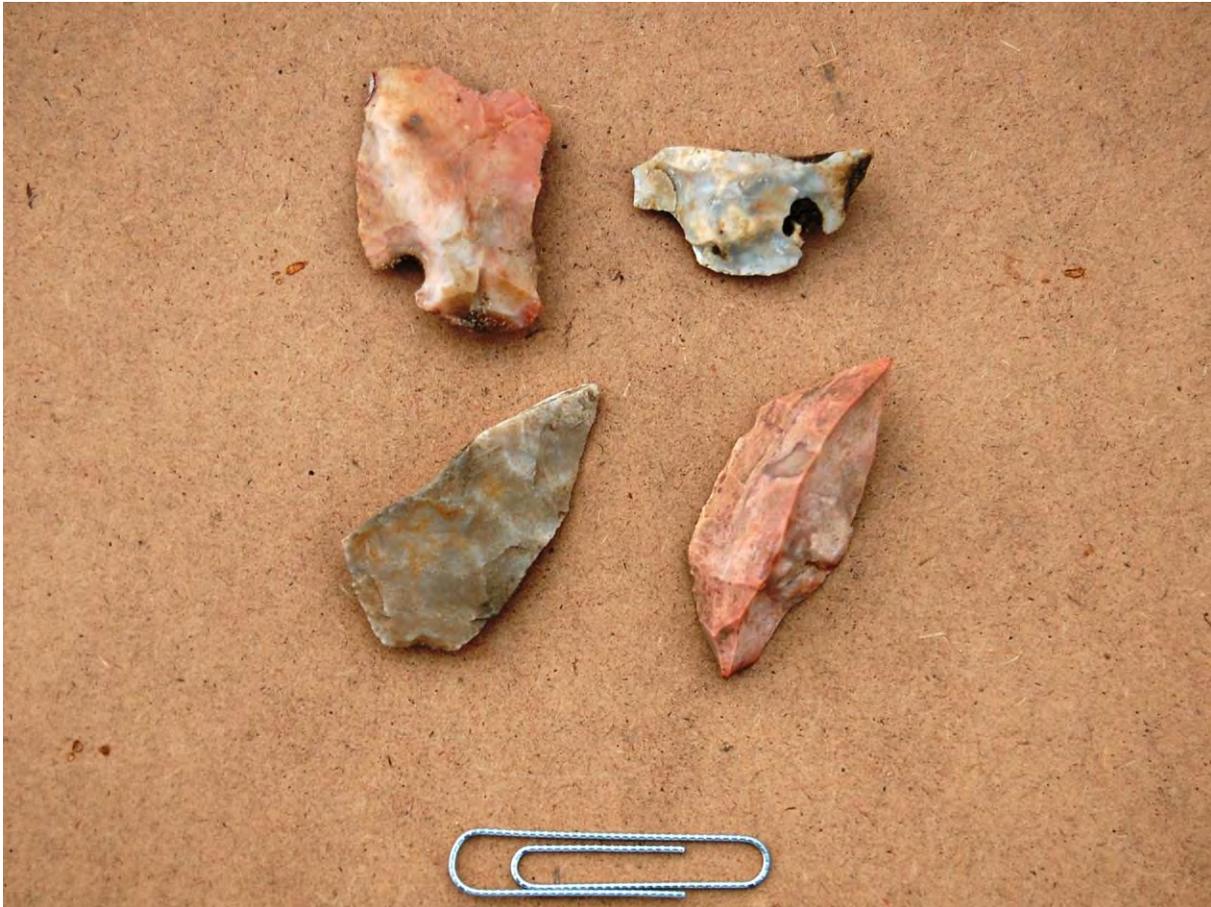


Plate 19. Chipped-Stone Artifacts from Site 13DW134.

Site 13DW134 remains unevaluated for listing in the NRHP; however, assuming there is sufficient surface soil at the site to offer potential for undisturbed subsurface deposits, then the presence of temporally diagnostic artifacts and high artifact density would allow the site deposits to be considered for National Register eligibility. Based on these observations LBG recommends that additional archaeological investigations be conducted to more fully define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW134, including site deposits that almost certainly extend above the anticipated shoreline elevation of 897 feet amsl.

Site 13DW136

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Stone Foundation; Possible Site of the Clark/Furman Saw Mill
Cultural/Temporal Association:	Historic (Hartwick Townsite, circa 1849-1907)
Site Size:	20 Meters (N-S) X 20 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None; Identified by Finn and Morrow 2010 as Site 13DW124
Cultural Materials Observed:	Cut Limestone/Dolomite Blocks, Brick, Machine-Cut Nails; Window Glass
Landform:	Holocene Terrace
Elevation:	882-890 Feet Above Mean Sea Level

Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Bertrand Silt Loam, 0-2% Slopes
Site Disturbance:	Soil Erosion; Gullied Slope
Relation To Study Area:	Site is 100% Within the Study Area
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing

Site 13DW136 was first reported by WVA in the fall of 2010 as part of 13DW124. Site 13DW124 included a historic building foundation situated on an eroded river terrace and a moderately sized scatter of prehistoric artifacts extending away from the structure. The building feature was described as a stone foundation measuring 4x6 meters with few associated artifacts. The overall site size, which included the prehistoric artifact scatter, was estimated as measuring 60 meters (NW-SE) by 25 meters (SW-NE).

LBG visited this site on September 29, 2011 and relocated, mapped and photographed the building foundation. LBG archaeologists also identified additional prehistoric artifacts outside the previously reported site boundary which almost doubled the estimated length of the total site area for 13DW124. Based on our field observations, we proposed that the Office of the State Archaeologist consider recording the historic building foundation and the prehistoric artifact scatter as two separate sites since the deposits were close together but did not appear to overlap. The OSA Site Records coordinator (Eck) agreed to assign 13DW136 to the building foundation but recommended that the original number assigned by WVA (13DW124) be cross-referenced on the new site record. Site 13DW136 now refers only to the historic building foundation at this location.

Site 13DW136 consists of a stacked limestone or dolomite foundation situated about 40 feet from the outer margin of an early Holocene terrace. The foundation appears to be rectangular in outline and is oriented with its shorter wall parallel to the terrace edge and the present Maquoketa River channel a short distance beyond. The full extent of the foundation is not exposed but the visible portion measures 24 feet wide and at least 30 feet long. The short wall on the west side is fully exposed and both it and the south wall are mostly visible and appear to be largely intact; however, the north west corner of the foundation has been washed out by the river and a 15-foot section is mostly absent. The short wall facing the river is exposed to a height of three feet and includes seven courses of tabular stone. Close inspection of the foundation along the south wall shows that it measures 24 inches thick. The ruins also include a large quantity of brick and many of the individual bricks are still attached to one another with mortar. Comparatively few historic artifacts were observed, although a number of machine-cut nails could be seen along the walls.

The building's position on the north bank of the river close to the former mill dam at Hartwick, its proximity and orientation to the river, its overall size and its thick-walled foundation suggests that it could be Hartwick's very first building, i.e., John Clark's saw mill built in 1849. The interior of the foundation appears to be filled with rubble and demolition debris suggesting that excavation of the interior may yield materials that could be used to determine its historic use and purpose.

No test excavations have been performed at this location and the site remains unevaluated for listing in the NRHP. Based on the historic background research completed for this report and the information gathered about the building's foundation, LBG recommends that additional archaeological investigations be conducted to determine if the structure has potential to be identified as the saw mill built by John Clark and later operated by the Furman family. These investigations should begin with more comprehensive archival research and interviews with local residents who may be knowledgeable about the early history of the Hartwick area. There may be historic photographs of the original mill complex that could be useful in making this determination without additional archaeological testing. If no conclusive evidence is found, then subsurface investigations both within and outside the foundation should be performed to



Plate 20. Stone Foundation at Site 13DW136. View of the west wall.



Plate 21. Plan View of the South Foundation Wall at Site 13DW136.

determine if any undisturbed archaeological materials exist that may help establish the building's historic identity and evaluate its potential eligibility for listing in the NRHP.

Site 13DW137

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Habitation
Cultural/Temporal Association:	Prehistoric
Site Size:	30 Meters (N-S) X 10 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None;
Cultural Materials Observed:	1 finished biface fragment; chert debitage
Landform:	High Terrace
Elevation:	890-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 2-9% Slopes
Site Disturbance:	Soil Erosion; Eroded Slope
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW137 was identified by LBG based on field investigations performed on September 29, 2011. The site is represented by a moderate scatter of prehistoric chipped-stone artifacts including a finished knife-like biface and other by-products of middle to late-stage stone-tool manufacture that were observed eroding from the top of a high terrace slope overlooking the Maquoketa River (Plate 22). Chipped-stone artifacts were observed on the exposed surface of the terrace at and below the former lake shoreline. No temporally diagnostic artifacts were observed, but numerous pieces of chert debitage are present on the eroded slope below the former lake shoreline. Most of these items appear to be middle to late-stage biface thinning flakes manufactured from local variations of Hopkinton chert. The majority of the chipped stone artifacts observed at the site appear to be unaltered with regard to heat treatment, but some heat-treated specimens are present including the finished biface. Heat may have been used to improve the fracture qualities of the local stone and is often applied during the later stages of stone tool manufacture.

No subsurface tests were excavated at the site. Artifacts were observed near the outer edge of the high terrace at and below the former shoreline, and it is reasonable to assume that more extensive site deposits extend onto the adjacent terrace above the shoreline. All of the archaeological materials observed on the terrace scarp below the shoreline are in eroded or secondary context. The potential for undisturbed or intact archaeological deposits exists at the 894 to 897 elevation contours and above. Subsurface testing on the adjacent terrace surface above the shoreline is needed to better evaluate the present condition of the site deposits at 13DW137.



Plate 22. Chipped-Stone Artifacts from Site 13DW137.

Site 13DW137 remains unevaluated for listing in the NRHP but the high terrace adjacent to the site is not heavily developed; therefore, there is potential for well preserved archaeological deposits to be present in the residential yard areas adjacent to the site. Based on these observations LBG recommends that additional archaeological investigations be conducted to more fully define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW137, including site deposits that are likely to extend above the anticipated shoreline elevation of 897 feet amsl.

Site 13DW138

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Artifact Scatter
Cultural/Temporal Association:	Prehistoric
Site Size:	30 Meters (N-S) X 10 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None;
Cultural Materials Observed:	Early-Stage Bifaces, Debitage
Landform:	High Terrace Slope
Elevation:	890-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (50-75% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 2-9% Slopes
Site Disturbance:	Soil Erosion; Gullied Slope
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline

NRHP Eligibility: Not Evaluated
Recommendations: Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW138 was identified by LBG based on field investigations performed on September 30, 2011. The site is represented by a light scatter of prehistoric chipped-stone artifacts that include early to middle-stage bifaces, flakes, and other by-products of stone-tool manufacture (Plate 23). Artifacts were observed on the eroded terrace slope below the surface of a high terrace. No temporally diagnostic artifacts were observed, but pieces of chert debitage are present on the eroded slope below the former lake shoreline. Most of these items appear to be associated with early-stage biface shaping and reduction and all of the items observed appeared to be manufactured from local variations of untreated or un-heat-altered Hopkinton chert.



Plate 23. Chipped-Stone Artifacts from Site 13DW138.

No subsurface tests were excavated at the site. Artifacts were observed below the outer edge of the high terrace below the former shoreline in disturbed contexts; however, it is reasonable to assume that more extensive site deposits extend onto the adjacent high terrace above the shoreline. The potential for undisturbed or intact archaeological deposits along the shoreline exists at the 895 to 897 elevation level and above; however, since most of the shoreline adjacent to this site is already stabilized by two to three-foot tall concrete retaining walls; the potential for continued erosion of in-situ archaeological site deposits at this location appears to be minimal. Subsurface testing on the adjacent terrace surface above the shoreline would be needed to determine the nature and extent of the site deposits at 13DW138.

Site 13DW138 remains unevaluated for listing in the NRHP. The high terrace adjacent to the site is occupied by closely spaced residential structures, but there are also extensive back yard areas adjacent to the shoreline that have potential to be largely undisturbed; therefore, there is potential for well preserved archaeological deposits to be present in the residential yard areas adjacent to the site. Based on these observations LBG recommends that additional archaeological investigations be conducted to define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW138, including

site deposits that are likely to extend above the anticipated shoreline elevation of 897 feet amsl. Even though the shoreline adjacent to the present site materials has already been stabilized, it is possible that undisturbed site deposits may extend to other portions of this terrace landform that are unprotected.

Site 13DW139

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Artifact Scatter
Cultural/Temporal Association:	Prehistoric
Site Size:	30 Meters (E-W) X 15 Meters (N-S)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None;
Cultural Materials Observed:	Middle-Stage Biface, Chert Debitage
Landform:	High Terrace
Elevation:	890-897 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (80-90% Surface Visibility)
Soil Type:	Lilah Sandy Loam, 0-2% Slopes
Site Disturbance:	Soil Erosion
Relation To Study Area:	Boundary Is Not Fully Established; Site Likely Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW139 was identified by LBG based on field investigations performed on September 30, 2011. This site is located on the same high terrace point bar landform as 13DW138, but is situated almost 200 meters downstream. Site 13DW139 is represented by a moderate scatter of prehistoric chipped-stone artifacts that included a middle-stage biface, thinning flakes, and other probable by-products of stone-tool manufacture. Artifacts were observed on the eroded portion of the high terrace below the former shoreline. No temporally diagnostic artifacts were observed, but at least one shaped and thinned biface blank (Plate 24) and numerous pieces of chert debitage were noted on the sandy terrace surface. Most of these items appear to be manufactured from local variations of untreated Hopkinton chert.

No subsurface tests were excavated at the site. Artifacts were observed on an eroded extension of the high terrace surface that had previously been submerged by the lake. The artifacts were concentrated in an area measuring approximately 30 by 10 meters in extent that had the appearance of an outlier or eroded terrace lag deposit surrounded by sandy outwash. The presence of these finds on the same landform as 13DW138 suggests that there may be a much more extensive site area farther inland and that both 13DW138 and 13DW139 may be marginal expressions of that larger site. In any case, it is reasonable to assume that more extensive site deposits extend onto the adjacent high terrace above the shoreline in the immediate vicinity of Site 13DW139. The potential for undisturbed or intact archaeological deposits along the shoreline exists at the 890 to 897 elevation level and above. Similar to the situation at Site 13DW138, there are short retaining wall structures along the shoreline adjacent to 13DW139 and the potential for continued erosion of in-situ archaeological site deposits above the shoreline at this location appears to be minimal. Subsurface testing on the adjacent terrace surface above the shoreline would be needed to determine the nature and extent of the site deposits at 13DW139 and whether they may be linked to the site area at nearby 13DW138.

Site 13DW139 remains unevaluated for listing in the NRHP. The high terrace adjacent to the site is occupied by closely spaced residential structures, but there are also extensive back yard areas adjacent to

the shoreline that have potential to be largely undisturbed; therefore, there is potential for preserved archaeological deposits to be present in the residential yard areas adjacent to the site. Based on these observations LBG recommends that additional archaeological investigations be conducted to define the nature and vertical and horizontal extent of the archaeological deposits present at 13DW139, including site deposits that are likely to extend above the anticipated shoreline elevation of 897 feet amsl. Even though the shoreline adjacent to the present site materials has already been stabilized, it is possible that undisturbed site deposits may extend to other portions of this terrace landform that are unprotected.



Plate 24. Middle-Stage Biface from Site 13DW139.

Site 13DW140

Site Name:	Lake Delhi Fish Weir
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Fish Weir
Cultural/Temporal Association:	Prehistoric
Site Size:	20 Meters (N-S) X 20 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None;
Cultural Materials Observed:	Constructed Rock Barrier
Landform:	Maquoketa River Channel and Adjacent Holocene Terrace
Elevation:	885 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (100% Surface Visibility)
Soil Type:	Spillville Loam, 0-2% Slopes (Adjacent River Bank)
Site Disturbance:	Channel Erosion; Current May Have Removed Part of the Site
Relation To Study Area:	Site is 100% Within the Study Area
NRHP Eligibility:	Not Evaluated
Recommendations:	Detailed Mapping and Documentation

Site 13DW140 was identified by LBG during field reconnaissance on September 30, 2011. The site is represented by an angled alignment of cobble-size natural rock that extends into the present channel of the Maquoketa River. At the present water level (elevation 884-885 feet amsl), the rock alignment protrudes about 6 to 12 inches above the surface. The exposed portion of the alignment that extends into the river channel has a uniform width that measures approximately 4 to five feet across. This segment of the alignment is about 35 feet long and extends at an acute angle into the river channel in a downstream direction. At the upstream end of this alignment, there is a 15-to-20-foot-long dog-leg extension that angles back toward the left bank of the river. The overall dimensions of this bank alignment are variable depending on where one chooses to measure, but the concentration of rock expands from a width of about 6 feet where it joins the upstream end of the channel alignment to an approximate width of 20 feet across where it merges with the terrace sediments on the left bank.

Similarly constructed rock alignments have been documented on the Iowa and Wapsipinicon rivers in eastern Iowa (Jones 2003). The structure located on the Iowa River near Amana, is known as the Amana Fish Weir (13IW100) and was listed on the NRHP in 1988. The Amana Fish Weir is constructed of rock cobbles similar to the alignment described above, but consists of two curved alignments that meet in the middle of the river channel to form a V-shape with the point oriented downstream. It was constructed by Native American tribes and is believed to have functioned as a fish trap. Similar structures, described in historical accounts, typically included wooden poles embedded in rock along with woven branches or brush to form a fence-like barrier across rivers or streams. The structures were designed to allow fish to move upstream by passing through or over the barrier during periods of high water, but it would then serve as a barrier to movement downstream. In the case of V-shaped structures, the barrier might also function to funnel fish toward a central opening where a net or some other form of collection device or even a spearing station might be used (Jones 2003:88).

The rock alignment observed within the study area appears to include only rock. No wood poles or other evidence of an associated structure was observed at the site and no artifacts of any type, prehistoric or historic, appeared to be present or associated. The setting for this structure strongly suggests that it may be part of a prehistoric fish weir. It is situated in a portion of the valley that has a bedrock wall on the outside meander to create a stable shoreline and the talus materials that have accumulated along the base of that slope would have provided a close and convenient supply of building materials. The structure has been submerged for the past 80 years so it is not of recent construction, and there are no records of historic activity in this part of the valley that might indicate 19th century construction of a small overflow dam in this area. The overall dimensions of the alignment are comparable with other barrier structures located on the Wapsipinicon River (e.g., Slide Rock Fish Weir – 13JN313) and the size of rocks used to assemble the Lake Delhi structure are comparable to those used to construct other prehistoric fish weirs, i.e., small enough to be carried by hand.

Site 13DW140 remains unevaluated for listing in the NRHP; however, it appears to be a strong candidate to be the first prehistoric fish weir reported on the Maquoketa River. The structure appears to be incomplete, but it is possible that a companion alignment extending from the right bank, if it existed, may have been removed during the 2004-2005 dredging operations that took place within the river channel. Based on the observations described above, LBG recommends that additional archaeological investigations be conducted to carefully map and document the rock alignment that remains. These investigations may include exploration to determine if any evidence exists for wood pole inclusions that might help confirm its design and purpose.



Plate 25. Photograph of Site 13DW140. View looking downstream.

Site 13DW141

Site Name:	None
Map Source:	USGS Earlville, IA, 7.5' Series Topographic Quadrangle (1973)
Legal Description:	(Confidential)
Site Type:	Rockshelter
Cultural/Temporal Association:	Prehistoric
Site Size:	20 Meters (N-S) X 20 Meters (E-W)
Phase I Methods:	Pedestrian Survey
Area Excavated:	N/A
Cultural Materials Collected:	None;
Cultural Materials Observed:	Burned rock, Debitage
Landform:	Upland Slope
Elevation:	897-925 Feet Above Mean Sea Level
Land Use/Surface Visibility:	Eroded Shoreline (90-100% Surface Visibility)
Soil Type:	Nordness Rock Outcrop, 25-60% Slope
Site Disturbance:	Soil Erosion at Shoreline
Relation To Study Area:	Site Deposits Eroded at Shoreline; Site Extends Above Shoreline
NRHP Eligibility:	Not Evaluated
Recommendations:	Additional Phase I Testing; Bank Stabilization if Warranted

Site 13DW141 is a rockshelter formation identified by LBG based on field investigations performed on September 28, 2011. The shelter is located above the 897 contour identified as the study area boundary; however, it appears that archaeological deposits may extend beyond the dripline in front of the shelter and down to the proposed lake level where they have been subject to past shoreline erosion. Chipped-stone artifacts and small fragments of burned rock were observed eroding from the exposed face of the shoreline deposits. The floor of the shelter is situated an estimated five feet above the former shoreline.



Plate 26. Overview of Rockshelter Interior at 13DW141.



Plate 27. Photograph of Eroded Shoreline at 13DW141.

The shelter is small but has an estimated floor space of about 40 square meters (Plates 26, 27). The ceiling is approximately 7 to 8 feet above the current floor elevation providing ample space for use as a habitation site. No subsurface tests have been excavated at the site and the floor deposits within the protected portion of the shelter do not appear to have been disturbed. No carvings, petroglyphs, or mineral stains were observed on the walls of the shelter and no features were observed on the floor. Some reddish discoloration was noted on the back wall of the shelter which suggests oxidation from fire and heat. No artifacts were observed on the floor of the shelter, but several pieces of chipped stone debitage and small fragments of burned rock were observed eroding from deposits in front of the shelter within approximately two to three feet of the former high water mark for Lake Delhi.

Site 13DW141 remains unevaluated for listing in the NRHP. Site 13DW141 is located above the 897 foot elevation contour which has been identified as the upper limit for consideration of the proposed project's potential for adverse effects. However, it appears that the potential for below-ground archaeological deposits associated with Site 13DW141 may extend into or very near this zone of effect. Based on the field observations described above including the presence of associated archaeological materials at or near the previous high water mark for Lake Delhi (see Plate 27), LBG recommends that this site be included in the assessment of the project's potential effects on archaeological resources. LBG further recommends that additional archaeological investigations be conducted to define the nature and extent of the archaeological deposits present at 13DW141 including those located outside the dripline in front of the shelter.

VI. SUMMARY AND RECOMMENDATIONS

A. SUMMARY OF SURVEY FINDINGS

LBG has completed a cultural resource assessment and Phase I reconnaissance survey for the Lake Delhi study area. A records search for the area revealed that the area had received very little attention from professional archaeologists prior to the embankment failure at the Delhi Dam in July 2010. However, recent historical and archaeological investigations following this event have identified a number of potentially significant archaeological resources within the drained impoundment area including a variety of prehistoric Native American sites and several sites associated with the valley's earliest non-Indian settlement at Hartwick.

The study area's potential to contain historically or scientifically significant archaeological sites is closely linked to its geological history which not only created an environment attractive for human settlement, but also provides a basis for understanding where that history is most likely to be preserved in the form of archaeological sites. The study area is situated in a gorge-like section of the Maquoketa River valley, and like Backbone State Park upstream and Pictured Rocks County Park downstream, the exposed bedrock, pronounced stream meanders, diverse natural resources, and picturesque setting found in this part of the river valley have offered unique resource and settlement opportunities to human populations for thousands of years. The research findings reported in this study show that Native American cultures have used the valley's stone resources for at least 8000 years. They settled on many of the same high terrace landforms that the area's modern residents also find attractive. Evidence of buildings established by some of the valley's first European-American settlers have also been re-discovered.

The present study was not intended to locate all of the archaeological sites that exist within the lake. Its goal was instead to provide a broader view of the overall situation and based on that to offer some guidance for moving forward with plans to recreate Lake Delhi in a manner that takes into account its potential to have additional adverse effects to the valley's known and unknown archaeological resources.

Without investigating some of the archaeological sites located within the former impoundment area in more detail, i.e., through testing or excavation, it is difficult to know how the deposits may have been affected by placing them under water for the past 80 years. In many places, this action has likely resulted in many sites being covered with a blanket of silt that one might argue has actually provided them with added protection. Dredging operations conducted prior to 2010 presumably damaged some resources. The precise location of these activities is unknown and difficult to judge at this point, but one possible casualty may have been the fish weir structure identified at Site 13DW140. In any case, our review of the area suggests that the most significant damage to archaeological resources situated within the former impoundment area likely occurred in the immediate aftermath of the embankment failure as immense volumes of water drained from the valley causing surface scour on the upstream portions of terrace landforms and downcutting through terrace sediments as the river reclaimed its former channel. Significant erosion of the exposed terrace landforms has also continued in the months since the failure event as rain and storm-water runoff have resulted in extensive sheet erosion and the development of rills and deep gullies along the outer margins of virtually all the high terrace landforms. These conditions are actively affecting archaeological deposits at several reported sites, particularly those located in the lower half of the study area (i.e., 13DW123, 13DW124, 13DW126, 13DW133, 13DW134). Channel erosion of adjacent terrace landforms was also noted as a potential threat to terrace landforms with known and potential unreported archaeological sites, particularly the Holocene age terrace near Hartwick.

As a result of this study, we can confirm the expectation that there are indeed a large number of prehistoric archaeological sites within the impoundment area. Virtually every high terrace landform with exposed surfaces that we inspected within the valley shows evidence of prior use by prehistoric cultures. And although surface exposures were less common on early Holocene landforms within the valley, it is reasonable to assume from this site density that they likewise contain archaeological deposits. Most of the lower Holocene-age landforms are more thickly covered with deposits of alluvial sand and silt which limit their suitability for effective pedestrian survey. In most places, the only way to confirm the presence or absence of archaeological sites on these landforms would be to employ some form of intensive subsurface testing.

To date, we can confirm the presence of 12 archaeological sites within the impoundment area. These include eight new archaeological sites identified as a result of the current survey and four sites reported by previous investigators working near Hartwick in 2010. Ten of these sites contain evidence of past use by prehistoric Native American cultures as much as 8000 years ago. Most of these sites (7 of 10) appear to be open habitation areas or settlements (13DW123, 13DW124, 13DW133, 13DW134, 13DW137, 13DW138, 13DW139) while one is a smaller habitation site situated within a natural rock shelter (13DW141). Other sites include an apparent fishing site that includes a rare fish weir structure (13DW140) and a site used to secure and prepare stone used in the manufacture of everyday tools (13DW126). Mid-19th century building foundations are represented at two separate locations near the former townsite of Hartwick (13DW125, 13DW136) and are believed to be associated with the historic settlement that once existed at that location. Fragments of contemporary historic artifacts were also identified at two other nearby locations that also produced prehistoric artifacts (13DW123, 13DW126).

No prehistoric burial mounds were identified during the Phase I reconnaissance survey; however, the possibility exists that human remains could be interred at any of the habitation sites identified within the study area. Since human remains and human burials are protected by Iowa State Law (Chapters 516 and 716.5, Iowa Code), special consideration must be accorded these site areas in the event that additional site testing is conducted or if some of the protective measures recommended below are implemented at these sites.

None of the 12 known archaeological sites described in this report have been evaluated with regard to their eligibility for listing in the NRHP. No subsurface testing has yet been conducted at any of these sites and this type of investigation would be needed in each instance to gather the information necessary to make those determinations. At present, the reported boundaries of these sites are based solely on the distribution of artifacts exposed at the ground surface and many of the site boundaries are also truncated at the 897-foot elevation contour since no investigations were authorized outside the limits of the study area. In most instances, investigations outside this study area boundary would require subsurface testing because the land surfaces above the 897-foot elevation are obscured by lawns and other vegetation that limit the effectiveness of visual survey. Because of these limitations, the reported boundaries of these 12 sites may not coincide with the full horizontal extent of subsurface archaeological deposits present at these locations. Additional site investigations including subsurface testing would be necessary to delineate the full areal extent of archaeological site deposits in relation to the current project area and to assess their eligibility for listing in the NRHP.

B. RECOMMENDATIONS

In the event that this project qualifies as a federal undertaking, LBG recommends that the District consult with the responsible federal agency as advised by the Iowa SHPO (see Appendix B) to determine the scope of the federal undertaking and define an appropriate area of potential effect (APE). An APE is defined as “a geographic area within which an undertaking may directly or indirectly cause changes in the

character of use of historic properties, if any such properties exist.” (36 CFR § 800.16(d)). For the purposes of this preliminary investigation, the study area was defined as including all land surfaces upstream from the Delhi dam that are located at or below an elevation of 897 feet amsl; however, as explained in several of the site descriptions it may be necessary to conduct some site investigations above this elevation in order to properly evaluate sites situated on higher landforms whose margins may be affected by shoreline erosion.

Recommendations to fulfill Section 106 requirements are detailed below. These recommendations apply to the entire study area and include potential consideration of resource types other than archaeological sites.

- The *Lake Delhi Dam and Powerhouse Historic District* was recommended eligible for inclusion in the NRHP in March 2009. Key elements of this district were obviously damaged as a result of the embankment failure in July 2010. As a result, the National Register status of the district is in question. LBG recommends that the District consult with the appropriate federal agency and Iowa SHPO to seek an opinion on whether a re-evaluation of the property is warranted.
- LBG recommends that supplemental archaeological reconnaissance survey be completed for portions of the study area that were not inspected as part of the current investigation. The purpose of the survey should be to inspect landforms with high potential for exposed archaeological sites that may be subject to damage or disturbance by ongoing soil erosion. These areas include:
 - High terrace landforms located south of the Maquoketa River between Hartwick and Delhi Dam.
 - Early Holocene terrace landforms upstream from Linden Acres.
- LBG has recommended supplemental investigations at each of the 12 known archaeological sites described in this report. These recommendations are site specific and are intended to gather additional information regarding the nature, extent, and condition of the archaeological deposits present at each of these locations. This information may be needed in order for the federal agency to consult with the Iowa SHPO and other consulting parties regarding National Register eligibility and potential adverse effects associated with re-establishing Lake Delhi at its former levels. A summary of these recommendations is provided in Table 5.
- Pending completion of these supplemental investigations, LBG recommends that the project’s consulting parties consider preparation of a cultural resource management plan designed to address any site-specific mitigation measures that may be required to minimize adverse effects to potential historic properties and monitor their long-term effectiveness.

It is important to note that no method of archaeological survey or testing is considered adequate to identify all potential archaeological resources that may exist in a given project area. Therefore, should any unrecorded archaeological resources be discovered during the course of the project construction, all ground disturbing activities in the vicinity of the discovery should be discontinued and the responsible federal agency, if any, and the State Historical Preservation Office (SHPO) at the Historic Preservation Bureau of the State Historical Society of Iowa (a Division of the Iowa Department of Cultural Affairs), should be notified and consulted regarding the need for further evaluation of the discovery. In the event that suspected human remains or unreported human burials are discovered during project construction, Iowa law (Iowa Code Chapters 263B and 716.5) requires that all construction activities in the immediate area be halted immediately pending notification of law enforcement authorities and/or the Office of the State Archaeologist as appropriate.

Table 5. Recommended Site Investigations

SITE #	SITE TYPE	RECOMMENDED INVESTIGATIONS
13DW123	Artifact Scatter	Conduct subsurface testing to sample site deposits and establish site boundaries; may require testing above 897 elevation
13DW124	Habitation	Conduct subsurface testing to sample site deposits and establish site boundaries; may require testing above 897 elevation
13DW125	Stone Foundation	Conduct subsurface testing to sample site deposits and establish site boundaries
13DW126	Resource Procurement (prehistoric); Artifact Scatter (historic)	Conduct subsurface testing to sample site deposits and establish site boundaries; may require testing above 897 elevation
13DW133	Habitation	Conduct subsurface testing to sample site deposits and establish site boundaries; will likely require testing above 897 elevation Consult with OSA prior to investigation of exposed rock feature
13DW134	Habitation	Conduct subsurface testing to sample site deposits and establish site boundaries; will likely require testing above 897 elevation
13DW136	Stone Foundation (Hartwick Saw Mill)	Conduct archival research & interview local historians Conduct subsurface testing within foundation to sample site deposits
13DW137	Habitation	Conduct subsurface testing to sample site deposits and establish site boundaries; will require testing above 897 elevation
13DW138	Artifact Scatter	Conduct subsurface testing to sample site deposits and establish site boundaries; will require testing above 897 elevation
13DW139	Artifact Scatter	Conduct subsurface testing to sample site deposits and establish site boundaries; will require testing above 897 elevation
13DW140	Fish Weir	Map and document rock alignment; Limited exploration to determine presence/absence of wood posts
13DW141	Rockshelter	Prepare detailed map of shelter interior Conduct limited subsurface testing to sample site deposits that may be affected by shoreline erosion; will require testing above 897 elevation

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APPENDIX A

National Archaeological Database Form (NADB)

Database Doc Number:

NATIONAL ARCHAEOLOGICAL DATABASE – REPORTS DATA ENTRY FORM

1. R & C #: _____
2. Authors: Randall M. Withrow

Year of Publication: 2011
3. Title: Archaeological Reconnaissance Survey of Lake Delhi, Delaware County, Iowa

4. Report Title: _____
Volume #: _____ Report #: _____ NTIS: _____
Publisher: _____
Place: _____

5. Unpublished
Sent From: The Louis Berger Group, Inc.
Sent to: Lake Delhi Combined Recreation Facility and Water Quality District Trustees
Contract #: _____

6. Federal Agency: _____

7. State: Iowa Iowa _____
County: Delaware Delaware _____
Town: Delhi Milo _____

8. Work Type: 7 86 _____

9. Keyword: 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

<u>450 acres</u> [7]	<u>rockshelter</u> [0]
<u>Hartwick Lake</u> [4]	<u>Fishweir</u> [0]
<u>Iowan Surface</u> [4]	<u>Hartwick townsite</u> [0]
<u>Maquoketa River</u> [4]	_____ []
<u>Lake Delhi</u> [4]	_____ []
_____ []	_____ []

10. UTM Zone: _____ Easting: _____ Northing: _____
_____ Easting: _____ Northing: _____
_____ Easting: _____ Northing: _____
_____ Easting: _____ Northing: _____

11. Township: T88N T88N _____
Range: R4W R5W _____

Other Publication Types:

12. Monograph

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 #:	13DW123	13DW141	_____	_____	_____	_____
	13DW124	_____	_____	_____	_____	_____
	13DW125	_____	_____	_____	_____	_____
	13DW126	_____	_____	_____	_____	_____
	13DW133	_____	_____	_____	_____	_____
	13DW134	_____	_____	_____	_____	_____
	13DW136	_____	_____	_____	_____	_____
	13DW137	_____	_____	_____	_____	_____
	13DW138	_____	_____	_____	_____	_____
	13DW139	_____	_____	_____	_____	_____
	13DW140	_____	_____	_____	_____	_____

19. Quad Map:

Name: Earlville, IA, 7.5' Series

Date: 1973

Manchester, IA, 7.5' Series

1973

APPENDIX B

Correspondence

November 2, 2010

Ms. Pat Boddy, Interim Director
Iowa Department of Natural Resources
Wallace State Office Building
Des Moines, 50319

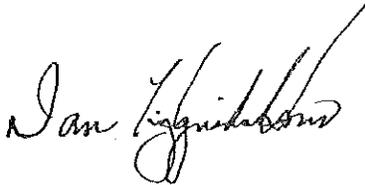
RE: COE – DELAWARE COUNTY – LAKE DELHI – LAKE DELHI RESTORATION INITIATIVE – IOWA SHPO
RECOMMENDATIONS TO THE GOVERNOR’S TASK FORCE ON REBUILDING LAKE DELHI

Dear Ms. Boddy,

The State Historic Preservation Office has prepared the following for the consideration of the Environment Committee of the Lake Delhi Recover & Rebuild Task Force. It is our sincere hope that the Task Force will incorporate some or all of its content into its final report to the Governor.

Please feel free to contact Ms. Barbara Mitchell, Deputy State Historic Preservation Officer, at (515) 281-4013 or me at (515) 281-8744 if you have any questions or if you would care to discuss this further.

Sincerely,



Daniel K. Higginbottom, Archaeologist
Iowa State Historic Preservation Office

NATIONAL HISTORIC PRESERVATION ACT

There is every indication that implementation of the Lake Delhi restoration initiative will require some level of Federal involvement in order to accomplish its objectives. The infusion of Federal funds, the issuance of Federal permits or licenses, or the acceptance of Federal assistance will invoke agency compliance with Federal environmental and preservation laws including section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470 *et seq.*)

Section 106 of the National Historic Preservation Act directs all Federal agencies to take into account the effects of their undertakings on historic properties. According to the Advisory Council on Historic Preservation’s rules implementing section 106, an undertaking means “a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency” [36 CFR Part 800.16(y)].

In accordance with the Act, Federal agencies are obligated to complete the Section 106 compliance process *prior to* the approval of the expenditure of any Federal funds on an undertaking or *prior to* the issuance of any license or permit [36 CFR Part 800.1(c)]. With this in mind, the section 106 process requires consideration early in the planning process in order to be completed in a timely, efficient, and cost effective manner. In this respect, section 106 is much like the compliance processes established for other Federal environmental rules and regulations. Many Federal agencies have internal policies and

procedures outlining how they approach Section 106 compliance and some maintain professional staff to deal specifically with historic preservation matters. Others do not.

The Maquoketa River drainage has a deep, rich, cultural past spanning a period of around 12,000 years. The area surrounding modern-day Lake Delhi would have been particularly attractive to prehistoric people owing to its plentiful riverine resources including local bedrock outcrops that yield a particularly high-grade of chert used prehistorically in the manufacture of stone tools. Systematic professional archaeological survey of the Lake Delhi basin and surrounding shoreline was not conducted prior to original construction so unfortunately no baseline information on local cultural resources is available. However, nodules of raw and quarried chert, along with the byproducts of stone tool manufacture, have been observed in rock bars along the floor of the drained lake. Of more recent historic interest are the abandoned town of Hartwick, features of which - including building foundations and associated artifact deposits - were inundated by the impoundment of Lake Delhi, and the Lake Delhi Dam and Powerhouse Historic District, which has been evaluated as eligible for listing in the National Register of Historic Places.

The Iowa State Historic Preservation Office (SHPO) offers the following recommendations in anticipation of a federal action(s) that would invoke Section 106 compliance.

Designation of a Lead Federal Agency. As project planning proceeds and federal sponsors are identified, it would be in the project's best interest to designate a lead federal agency in order to eliminate redundancy, improve efficiency and reduce the cost of project compliance. The Council's rules allow for the designation of a lead federal agency to serve on behalf of all agencies involved in fulfilling their collective responsibilities under section 106 [36 CFR Part 800.2(a)(1)]. The SHPO encourages this type of arrangement. However, it is ultimately the agencies' decision on whether or not they will participate in a lead or subordinate capacity.

Coordinate with other Reviews. The agency should coordinate the steps of the section 106 process, as appropriate, with the overall planning schedule for the undertaking and with any reviews required under other authorities such as the National Environmental Policy Act of NEPA, the Native American Graves Protection and Repatriation Act, the American Indian Religious Freedom Act, and the Archeological Resource Protection Act. This too will eliminate redundancy, improve efficiency and reduce costs associated with project compliance.

Early Consultation. The National Historic Preservation Act, along with other applicable federal authorities, require consultation with federally recognized Indian tribes in order to identify any concerns that they may have with respect to project impacts upon sites or objects of cultural patrimony. As recognized sovereign Nations, Tribes enjoy a unique status in the Federal review and compliance process. Consultation with an Indian tribe must recognize the government-to-government relationship between the Federal Government and Indian Tribes. The Act also requires the involvement of the State Historic Preservation Office in the consultation process and further directs the federal agency to identify and invite the consultation of other parties that may have a valid interest in historic properties affected by an undertaking. One such party is the University of Iowa, Office of the State Archaeologist (OSA), which has jurisdictional oversight of the Iowa Burial Laws and has statutory authority over Iowa's archaeological site records. The OSA frequently participates as consulting party on federal undertakings. Consultation is most successfully and expeditiously accomplished through early coordination and under the auspices of a lead agency that has procedures already in place and experienced staff to oversee their execution.

Identification and Evaluation of Historic Properties. 'Historic property' is defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places.' The term also includes artifacts, records and remains that are related to and located with such properties and properties of traditional religious and cultural importance to an Indian tribe. The federal agency is obligated to make a reasonable and good faith effort to identify and evaluate historic properties within a project's area of potential effects (APE), assess the magnitude of project effects, and to consult on ways to avoid, minimize, or mitigate those effects found to be adverse. Some federal funding programs include historic properties investigations as an allowable expense, others do not. When selecting a cultural resource service consultant, it is advisable (but not required) to select a vendor with regional historical expertise, one that employs a multi-disciplinary staff with expertise in archaeology, history, architectural history, and geomorphology, possesses an understanding of applicable state and federal preservation law, and that has a demonstrated history of assisting their clients through the compliance process.

Programmatic agreement. The rules implementing section 106 are found at 36 CFR Part 800. However, agencies are permitted to develop alternative procedures to accommodate the special circumstances and needs of a project provided that

those procedures are consistent with the Council's rules (36 CFR Part 800.14, Subpart C). Under its terms, a Programmatic agreement (PA), among other things, outlines roles and responsibilities of the signatories in meeting section 106 compliance, establishes procedures for consultation and action protocols in the event of unanticipated discovery, establishes procedures for historic property identification and evaluation; and outlines mutually-agreed upon mitigation measures. The advantages of a PA over the 36 CFR Part 800 rules - particularly for a complex projects such as Lake Delhi restoration, are numerous. A PA allows its parties to address multiple steps in the process at once and allows for a seamless transition from one step to the next. Coordination of the section 106 process with other federal authorities such as NEPA, can also be facilitated under the terms of a programmatic agreement. One of the principal advantages of a PA is the definition of types of activities for which all parties agree that no further consultation is necessary.

APPENDIX C

SITE MAPS

Provided in Volume II

CONFIDENTIAL

THIS APPENDIX CONTAINS CONFIDENTIAL INFORMATION REGARDING THE LOCATION OF ARCHAEOLOGICAL SITES AND, UNDER SECTION 304 OF THE NATIONAL HISTORIC PRESERVATION ACT OF 1966, IS NOT FOR PUBLIC DISTRIBUTION