# Archaeological Investigations For the Southwest Light Rail Transit Project: Areas A and B, and the Holden-Royalston Parcel

**(#13P026 Amendment #1)**

Prepared for
**Metropolitan Council**

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# Chapter 1: Introduction

## Project Overview

In August 2013 the Metropolitan Council contracted 10,000 Lakes Archaeology Inc. to evaluate seven archaeological sites for the Southwest Light Rail Transit Project (project). The final report for these evaluations was submitted in February 2014. The contract was amended in July 2014 to include Phase I investigations at two parcels (Area A and Area B) in Eden Prairie, and Phase Ia research with the potential for Phase I investigation at the Holden-Royalston parcel in Minneapolis. This work is being conducted in anticipation and preparation for project-related construction and maintenance activities which have been determined by the Federal Transit Administration (FTA) as an undertaking as defined by the National Historic Preservation Act (NHPA). Thus, the project is subject to the provisions of Section 106 of the NHPA which requires federal agencies to consider development impacts on historic properties as part of the planning process. The Cultural Resources Unit (CRU) of the Minnesota Department of Transportation (MnDOT) acts on behalf of FTA for the Section 106 review process for the Project.

The research and archaeological investigations documented in this report represent the latest step of archaeological and historic property identification over several years of work guided by *Southwest Transitway: A Research Design for Cultural Resources* (Roise et al. 2010) (Appendix A). Phase Ia background research was completed in early 2014 for Areas A and B and reported in Halvorson and Bring (2014), but background research had not been conducted for the Holden-Royalston parcel prior to the present investigations.

This report presents the results of the Phase Ia background research and Phase I investigations for the Holden-Royalston parcel in Minneapolis, and Phase I investigations at Areas A and B.

## Parcels Examined

10,000 Lakes Archaeology Inc. conducted Phase Ia background research for the Holden-Royalston parcel and Phase I archaeological investigations at Holden-Royalston in Minneapolis and Areas A and B in Eden Prairie.

The 10,000 Lakes Archaeology Inc. team was comprised of three separate companies: Amanda Gronhovd, President of 10,000 Lakes Archaeology Inc., served as Project Manager and Principal Investigator; Ryan Grohnke, archaeologist at Westwood Professional Services assisted with the archaeological fieldwork; and David Maki, owner of Archaeo-Physics LLC, conducted the geophysical investigations and served as the project Geographic Information System (GIS) specialist.

## Chapter 2: Environmental Setting

The project area is located within the Central Lakes Deciduous Region (Region 4) according to Anfinson (1990). This region encompasses 25 counties from Dakota County in the southeast to Becker County in the northwest. Numerous lakes and rivers are present within the region, including the Mississippi and St. Croix Rivers as well as several smaller rivers and drainages.

The project area was last glaciated during the advancement and withdrawal of the Grantsburg sublobe of the Des Moines lobe of the Wisconsin glaciations about 12,000 years ago (Wright 1972). The landscape consists of hilly uplands on glacial till with the occasional ice-block-formed lake. The Hypsithermal peaked about 6,500 years ago, and the climate became warmer and drier, causing prairies to expand to the east and north (Lynott et al. 1986). Following the Hypsithermal, the region returned to cooler, wetter conditions, and deciduous forests and oak savannas replaced the northern and eastern edges of the prairies (Harrison and Madson 2010).

Specific regions have been established by the Minnesota Department of Natural Resources (MnDNR). These Provinces, Sections, and Subsections are characterized by topography, landscape, hydrology, and vegetation. The SWLRT project area falls into the Eastern Broadleaf Province, Minnesota and Northeast Iowa Morainal Section, and Big Woods Subsection, and drains into the Mississippi and Minnesota rivers via Bassett Creek, Minnehaha Creek, Nine Mile Creek, and Purgatory Creek (MnDNR 2015; Harrison and Madson 2010).

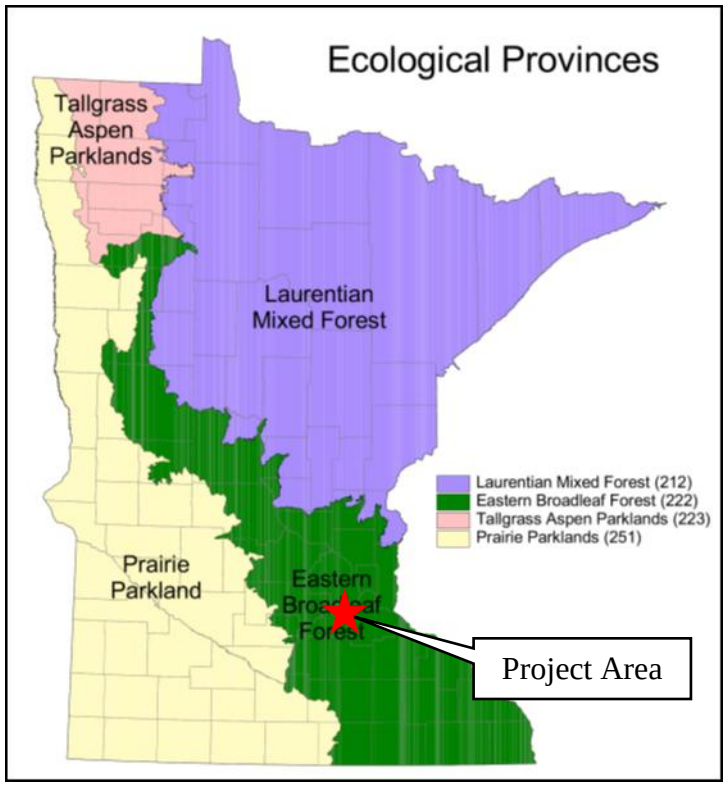


Figure 1. Map showing Ecological Provinces (MnDNR 2015)

### *Province*

The Eastern Broadleaf Forest Province extends from west-central Minnesota southwest into Iowa, Wisconsin, Michigan, Ohio, New York, Illinois, Indiana, Kentucky, Tennessee, Missouri, and Arkansas (Figure 1). The Province covers nearly 12 million acres of central and southeastern Minnesota, and is a transitional zone between the semiarid Prairie Parkland along the west edge of the state and the semi-humid mixed Laurentian Mixed Forest in the northeastern portion of the state (MnDNR 2015).

### *Section*

The Minnesota and Northeast Iowa Morainal Section (MIM) encompasses the SWLRT project area (Figure 2). This section, a long band that contains a mixture of deciduous forest, woodland, and prairie, extends nearly 350 miles from Polk County in northwestern Minnesota to the Iowa

border (MnDNR 2015). The terrain varies from "rugged to hummocky moraines deposited along the eastern margin of the Des Moines ice lobe during the last glaciation" and "rolling till or basal till deposited as drumlins" (MnDNR 2015).

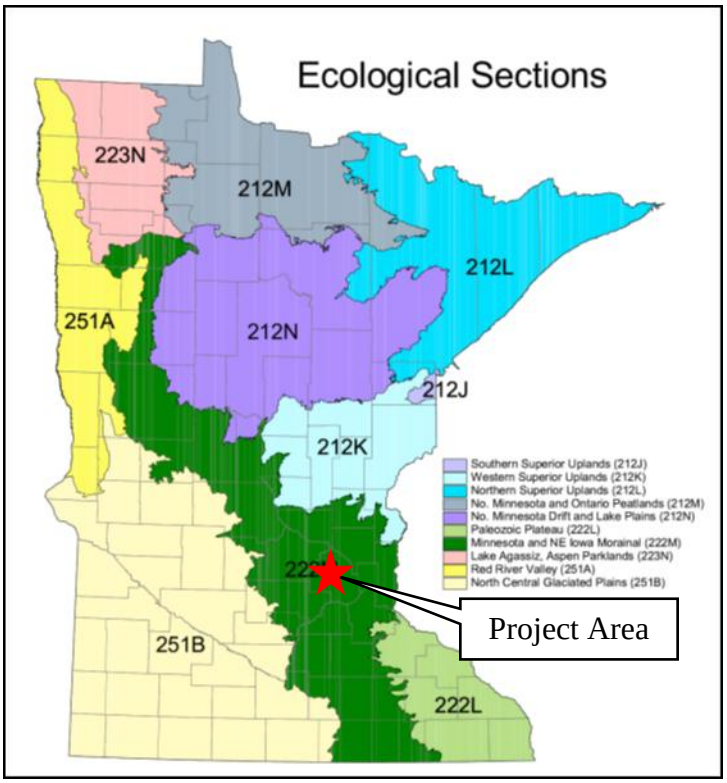

Figure 2. Ecological Sections (DNR 2015).

The three main types of vegetation and landscapes in the MIM result directly from the soils, landforms, and topography within the section. The sandy flat areas such as the Anoka Sand Plains, with its many open spaces were dominated by grasses, savannah, and oak and aspen woodlands, and promoted fire-dependent prairie and woodland vegetation. Areas dominated by forests where fires were uncommon have "fine-textured drift deposited in hummocky moraines and supported mesic forests dominated by sugar maple, basswood, American elm, and northern red oak" (MnDNR 2015). The floodplain and terrace forests that the section were present along the major river valleys (Mississippi, Minnesota, and St. Croix), and are still prominent today.

Forests of silver maple occupy the active floodplains, while silver maple, cottonwood, box-elder, green ash, and elm occupy the infrequently flooded terraces. These valleys are also characterized by herbaceous and shrubby river shore communities along shorelines, on sand bars, and, in some areas, by cliff communities on the steep and rocky river bluffs. Closed depressions that pond water in the spring provide habitat for open wetlands such as marshes, wet meadows, shrub swamps, and wet prairies. Peatlands are uncommon in this section and usually develop following formation of sedge or moss mats over sediments in former lake basins.

***Subsection***

The Big Woods Subsection consists of gently rolling hills located between tallgrass prairies to the west and savannah and tallgrass prairies to the east (Figure 3) (MnDNR 2015). The Mississippi, Crow, and Minnesota Rivers constitute the subsection's primary rivers. Lakes are also common with more than 100 lakes larger than 160 acres. Many of the lakes have no inlets or outlets, but are groundwater controlled.

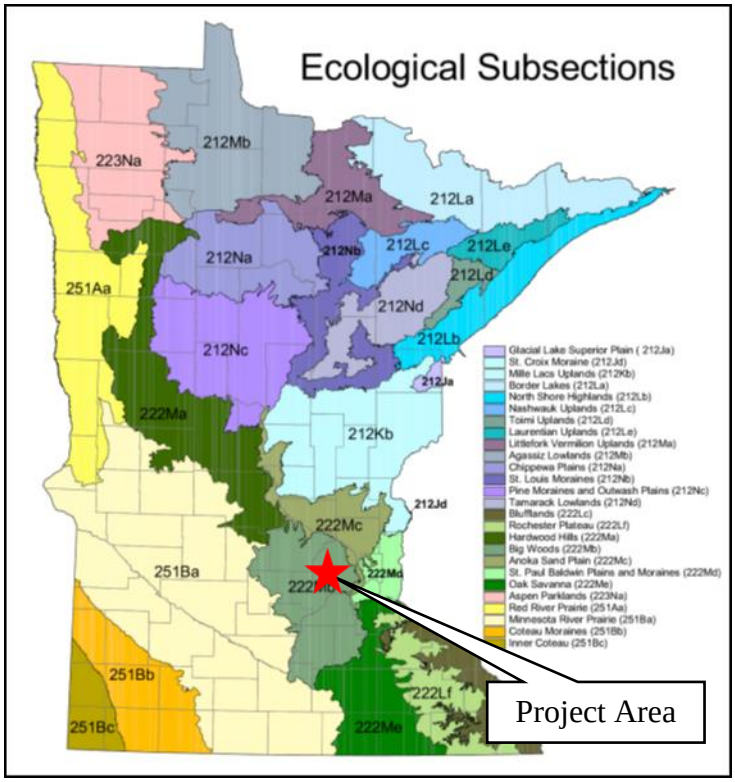

Figure 3. Ecological Subsections (DNR 2015).

Pre-settlement vegetation in the Section consisted primarily of oak woodland and maple-basswood forest. Currently over 75% of the subsection is agricultural, 5 to 10% is pastureland, and 10 to 15% is either upland forest or wetland (MnDNR 2015).

# Chapter 3: Cultural Context

## Cultural Overview

The Minnesota State Historic Preservation Office (SHPO) has developed several historic contexts for the state of Minnesota and the Upper Midwest. These contexts examine Minnesota's recent (historic) and distant (precontact) past, and are based on decades of archaeological and historic research. They are designed to help describe and interpret the history of the state, and give basic insight into the prevailing theories pertaining to the precontact and historic communities existing in specific locations at discrete points in time.

Cultural histories that focus solely on American Indian communities are divided into three major traditions: Paleoindian, Archaic, and Woodland. These traditions are defined on the basis of significant changes in how American Indian communities lived and what they ate. Additionally, the Mississippian/Oneota Tradition occurred in the Twin Cities region at the end of the Woodland Tradition.

Cultural histories that integrate American Indian history and Euro-American history are generally divided into the Contact and Post-Contact Periods. These contexts range from the first contact between Europeans and American Indians during European exploration in the region, through Euro-American settlement of traditionally American Indian lands.

This report highlights the major Precontact traditions. For a more detailed discussion about the prehistory of the project area, please see *Phase II Archaeological Survey For the Southwest Light Rail Transit Project* (Gronhovd, et al. 2014).

### *Pre-Contact Period*

*Paleoindian Tradition (12,000 to 8,000 Before Present [B.P.])*

The Paleoindian Tradition refers to the period of time at the close of the Pleistocene and into the Holocene, when American Indian communities were small, mobile and focused on hunting. Archaeological evidence from Paleoindian sites throughout the central United States and Canada indicates that these communities hunted a limited number of large animals in a variety of environmental settings. As the Pleistocene ended and the Holocene began, the megafauna gradually die out. This caused the Paleoindian people to shift their focus from hunting megafauna (e.g. mammoth), to primarily hunting the largest remaining species, bison. In addition to bison, it is likely that gathering wild plant foods and hunting smaller animals also contributed significantly to the diet of the Paleoindian people.

The distinctive stone tools made by the Paleoindians included large lanceolate projectile points. The fluted bases of Paleoindian projectile points are differentiated them from the later unfluted Paleoindian tools. Because Paleoindian communities were very small and nomadic, archaeologists have found only sparse, scattered evidence of the Paleoindian people in Minnesota.

*Archaic Tradition (8,000 to 2,800 B.P.)*

Shifts in diet and settlement patterns define the transition to the Archaic Tradition. During this period, it seems that native people were adapting to environmental changes by using more

diverse plant and animal resources, and creating and using broader range of tools including new projectile point forms, copper tools, and ground and pecked stone tools. Although some research suggests that community size increased during the Archaic period, some archaeological evidence counters that assumption, suggesting that community sizes remained small, and that day-to-day activities took place at a series of seasonal camps (Anfinson 1987; 1997).

During this period, Archaic people began developing regional differences within their material culture. In Minnesota, this variation appears to have been tied to the natural environment, specifically the plant communities. These variations focused on the "Plains Archaic" in the western prairies, "Eastern Archaic" in the deciduous forest, "Lake-Forest Archaic" in the transitional zone between the deciduous and boreal forest areas, and the "Shield Archaic" in the boreal forest areas of the northeast. The Twin Cities is located in the Lake Forest Archaic region, south of the Canadian Shield. Projectile point types and faunal remains recovered from Lake-Forest Archaic sites suggest that these people hunted large mammals. Additionally, bone artifacts including harpoons imply that they fished, while polished and ground stone tools indicate heavy reliance on processing plants. Copper tools including beveled adzes, spear points, and harpoons are also associated with the Lake Forest Archaic period (Mulholland 2000; Dobbs 1990). As with Paleoindian sites, Archaic period sites are small and ephemeral, making them difficult to locate.

*Woodland Tradition (2,500 to 350 B.P.)*
Throughout the Midwest the Woodland Tradition is generally divided into three periods: Early, Middle and Late. Anfinson (1987) has suggested that a division into Initial and Terminal periods might be more appropriate in Minnesota. Archaeological evidence indicates that in many ways, life for communities during the Woodland Tradition remained similar to those of the Archaic period, with a dependence upon a diverse, seasonal resource base of plants and animals (Anfinson 1987; Johnson 1988).

The transition from Archaic to the Initial Woodland Tradition (referred to by Dobbs [1990] as the Ceramic/Mound Stage) occurred when American Indians began manufacturing ceramic vessels, using bows and arrows, constructing earthen burial mounds, and cultivating and harvesting select plant species. These shifts may have been brought about by a shift from a warmer, drier climate to a cooler, moister climate. This cooling caused dramatic shifts in local plant and animal communities, and potentially concomitantly caused people to adapt by changing how they interacted with their environment.

In general, the Initial Woodland transitioned to the Early Terminal Woodland over several hundred years. During this time, populations grew, communities became more sedentary, burial mounds became more common, ceramics became more refined, and point styles changed (Gibbon 2012). Woodland sites are larger and more diverse than Paleoindian or Archaic sites, making them the most common type of Precontact archaeological site in Minnesota.

*Plains Village, Mississippian & Oneota Traditions (1,100 B.P. to European Contact)*
Significant changes in subsistence and settlement patterns characterize the Late Woodland cultures in Minnesota. Ceramic vessels differ from previous types in form as well as decoration, and settlement patterns shift to larger, more permanent villages typically located in riverine settings. Subsistence strategies appear to incorporate hunting and gathering with limited

agriculture focusing on specific plants. Archaeologists usually attribute sites that exhibit these cultural markers to one of two major traditions: Plains Village and Mississippian/Oneota. Evidence indicates that both the Plains Village and Mississippian complexes relied heavily on bison hunting and intensive corn horticulture.

Although the Plains Village complexes seem to have developed out of an indigenous Late Woodland base, evidence is less clear on how the Oneota complexes developed. One possibility is that the Oneota complex came about through people from other areas migrating to the Upper Midwest, bringing with them new ceramics, traditions, and life-ways. Another possibility is that people already living in the area began to adopt distinct cultural ideas, different from the other groups around them (Anfinson 1987; Henning and Henning 1978). Two separate Oneota Phases have been identified in southern Minnesota: the Orr and the Blue Earth. Orr sites are located in the southeastern corner of Minnesota and contain artifacts such as bison scapula hoes, sandstone abraders, catlinite pipes, and small triangular projectile points. The Blue Earth Phase also has scapula hoes as well as antler picks, bone awls, and shell tempered ceramics.

Archaeological remains of Plains Village and Oneota complexes range from cemeteries to small, limited use sites to extensive habitation sites. Site location depends on a variety of factors, including the location of specific resources such as food gathering locations, water, or a particularly desirable environment.

### *Historic Period*

*Contact/Postcontact Period (1630 to Present)*
This period generally refers to the span of time extending from the first European explorations until intensive Euroamerican settlement of the region. Minnesota's historical period began in 1673 when French explorers Marquette and Joliet discovered the upper portion of the Mississippi River. Ten years later, Catholic Missionary Father Louis Hennepin returned to France to write the first book about Minnesota, *Description de la Louisiane*, telling his story of exploring Minnesota and being held captive by the Dakota Indians.

The territory containing modern-day Minnesota was claimed by Spain, France, Great Britain, and eventually the United States. Lieutenant Zebulon Montgomery Pike led the first United States expedition through Minnesota in 1805. Fort St. Anthony (later Ft. Snelling) was constructed between 1819 and 1824, and in 1836 the Wisconsin Territory, including a portion of Minnesota, was formed. Minnesota became a territory in 1849 and a state on May 11, 1858. The fur trade drove much of the European exploration and settlement in Minnesota through the mid-1800s.

While the fur trade impacted American Indian communities throughout all of Minnesota, European settlement in the area exploded after the 1860s. At that time, intensive settlement and agriculture dramatically transformed the landscape, displacing a huge number of American Indians. In 1862 tensions between white settlers and American Indians exploded. The resulting Dakota – United State War ultimately left 462 whites and "an unknown but substantial number of American Indians dead" (Anderson and Woolworth 1988). This conflict concluded with the hanging of 38 American Indians in Mankato.

As white settlers made Minnesota their home, farming became the predominant industry. Wheat was the cash crop, and mills began to spring up along major waterways across the state, notably in Minneapolis. Minneapolis and Minnesota dominated the world in wheat processing until the 1930s.

In addition to milling, Minnesota was also a leader in mining and lumbering. Iron mining began affecting the state's economy in 1884, when ore shipped from the Soudan Mine constituted the opening of the Vermilion Iron Range, Minnesota's first of three iron ranges. Over the next two decades, mines sprang up across the northern and central portions of the state. The Vermilion, Mesabi, and Cuyuna iron ranges ultimately employed thousands of people and brought millions of dollars into Minnesota's economy. Shortly thereafter, lumbering played a significant role in the further development of northern Minnesota, with the industry peaking between 1899 and 1905.

Locations of archaeological sites from this period are influenced by the settlement patterns, subsistence activities, and economic strategies employed by explorers, traders, and settlers beginning in the late-17th century. Possible archaeological site types associated with this period reflect the influence of European and Euroamerican traders, missionaries, settlers, and industries. Associated archaeological and historic site types categorized in the Contact/Postcontact Period include standing structures as well as archaeological sites.

# Chapter 4: Research Methods

By Amanda Gronhovd and David Maki

## Background Research

### *Literature and Archival Research*

Background research for this project took place during the summer of 2014, and included examination of the Minnesota Archaeological Site Files and Minnesota Architectural History Site Files at the State Historic Preservation Office, historic maps (plat, city, insurance, etc.), local histories, and city directories. These sources were housed in a variety of locations, including the Minnesota Historical Society, Hennepin County Offices, Hennepin County History Museum, Hennepin County Library, and State and Local agencies.

### *Project Mapping and Geo-referencing of Historic Maps*

Project mapping and geo-referencing was accomplished using open-source geographic information system (GIS) software, QGIS (Version 2.2.0-Valmiera). All mapping used the following coordinate reference system. NAD 83, GRS 1980 ellipsoid, UTM Zone 15N, in meters.

A 1912 Sanborn Insurance map and a 1930's era historic aerial photo from the Holden-Royalston survey area were georeferenced by digitizing the UTM coordinates of known points. The outlines of historic structures within the project area were then traced and saved as shape files. Because the landscape has changed drastically in the vicinity of the Holden-Royalston parcel, there was considerable uncertainty associated with the process of geo-referencing and the resulting accuracies were likely in the neighborhood of plus and minus 10 to 20 meters.

### *LiDAR Map Research*

Light detection and ranging (LiDAR) data were used to conduct pre-field survey reconnaissance of each survey area. This reconnaissance sought to identify topographic anomalies potentially related to archaeological features. The recent availability of LiDAR data from the State of Minnesota's High Resolution Elevation mapping project has revolutionized archaeological investigations in the region. These data have allowed archaeologists to depict micro-topographic patterning over large areas in Minnesota, resulting in the identification, assessment, and documentation of cultural resources within the natural and human-altered landscape (Arnott et al. 2013a, 2013b, Maki, 2013, Artz, et al. 2013). For this reason LiDAR is fast emerging as a cost-effective method of archaeological reconnaissance and adjunct method for assessment.

Pre-survey reconnaissance was conducted using LiDAR visualization and analysis methods specifically designed for archaeological prospection (Bennett, 2011; Bennett, et. al., 2012; Challis, et al., 2011; Hesse, 2010). These methods included analysis of high-resolution shaded-relief maps illuminated from four different light-source azimuths, examination of constrained-shading imagery to understand relative variations in surface topography, utilization of high-pass background subtraction filtering (also known as local relief modeling) to enhance small-scale microtopographic patterning, and examination of terrain slope imagery, where slope is defined as the magnitude of the vertical gradient at each point.

Raw discrete response LiDAR data from the project area were downloaded in LAZ format and parsed using LAStools software. The Holden-Royalston LiDAR data have an overall sample density of 10.05 laser pulses per square meter, with 9.91 ground points per square meter (ground points = discrete responses classified as bare earth). The Eden Prairie data have an overall sample density of 1.43 laser pulses per square meter, with 1.22 ground points per square meter. The LiDAR data meet or exceed a minimal horizontal accuracy of +/- 0.60 m at a 95 percent confidence level and were tested to a vertical accuracy RMSE of +/- 12.5 cm.

The parsed data files were gridded and displayed using SURFER surface mapping software (Version 10.4). LiDAR data representing surface topography and structures were gridded to a uniform density of four samples per square meter (0.5 x 0.5 m) using the gridding method known as kriging. LiDAR images created in SURFER were exported to QGIS as georeferenced raster images at a resolution of four pixels per square meter.

## Field Methods

Field methods employed during this project included surface survey, shovel testing, and geo-physical investigations. Specific methods used in each survey area varied depending on site type, conditions, and size of survey area. The following section discusses general methods and standards employed during the project. Methods used in each survey area are discussed in the parcel-specific chapters.

### *Archaeological Field Methods*

Shovel testing occurred in all three survey areas. Shovel testing entailed the excavation of pits a minimum of 30 centimeters in diameter. All soil from the shovel tests was screened through ¼-inch mesh hardware cloth to determine if artifacts were present. Shovel tests were mapped and results were recorded.

In addition to shovel testing at the Holden-Royalston parcel, test units were also excavated mechanically using a Bobcat. These units measured approximately 2x2 meters, and were excavated to depths between 156 and 220 centimeters below surface (cmbs). After the mechanical units were excavated, unit walls were cleaned and profiled.

### *Geophysical Field Methods*

Ground penetrating radar (GPR) survey was used to help assess buried archaeological resources at the Holden-Royalston site. A brief description of the survey design parameters used during the geophysical investigation is presented below. A more comprehensive introduction to geophysical survey methods as applied to archaeology can be found in Clark (1996), Conyers and Goodman (1997 and 2012), Gaffney and Gator (2003), and Johnson (2006).

The GPR functions by sending high frequency electromagnetic waves into the ground from a transmitter antenna. Some of these waves are reflected back to the surface as they encounter abrupt vertical changes in the dielectric permittivity or electrical conductivity of the matrix through which they are traveling, and are detected by a receiver antenna (note: diffuse vertical changes in these properties do not produce significant reflections). The amplitude and two-way travel time of these reflections are recorded and used to construct a two-dimensional plot of horizontal distance versus travel time. Data collected in the field are stored for later analysis, and may be viewed as two-dimensional profiles in real-time during data collection.

GPR data are traditionally examined as profile maps depicting individual transects. Time-slicing is a technique for constructing plan view maps of an area at specific depths. Time (or depth) slicing not only makes interpretation of data in the horizontal plane much more intuitive, but also allows us to isolate specific depth slices (or more properly, the two-way travel times of reflected waves) for examination. GPR data were examined and analyzed as both profile maps and as plan view time-slice maps. Time data were converted to depth data (depth-slices) by using an estimated wave velocity of 0.10 m per nanosecond. Note that this is only an estimate. Actual velocities may vary both horizontally and vertically across any given archaeological site.

GPR survey data were collected using a Sensors & Software pulseEKKO 1000 radar system. A center frequency of 450 MHz was used. Data were collected in linear transects with a trace collected every 0.05 meter along each transect. The spacing between transects was 1.0 m, resulting in an overall data sample density of 20 GPR traces per square meter.

*Ground Penetrating Radar Data Processing and Display*

GPR data processing proceeded as follows: (1) The length of each individual GPR transect was normalized to its correct value; (2) Data were re-sampled to a consistent sampling interval down each GPR transect; (3) A 3 point low-pass smoothing filter was applied in the time-domain; (4) The zero-point in the time domain (time-zero) was defined as the point at which the signal amplitude exceeded 7% of the maximum signal amplitude. This time-zero point was set consistently in each individual GPR trace; (5) 2-D GPR profiles were converted to depth-slices by calculating the average-amplitude of the reflected signal within 20 cm thick windows; (6) Each individual depth-slice was interpolated to a uniform sample density in the horizontal plane; (7) A low-pass smoothing filter (0.25 m radius) was applied in the spatial dimension; (8) Data were displayed as grey-scale images at a range of positive four and negative two standard deviations ($\sigma$) from the mean value.

***Artifact Processing***

No intact soils or deposits were located during shovel testing, thus no artifacts were collected from the shovel tests. What appear to be historic deposits identified in the mechanical units, below the depth that the shovel test could extend. Because the soils from the mechanical units were not screened, artifacts were not collected. Instead, artifact types and locations from both the shovel test and mechanical units were documented in the field notes.

# Chapter 5: Historic Context, Phase Ia Research, Phase I Testing at Holden-Royalston Parcel

## Historic Context

The Holden-Royalston parcel is located in Minneapolis, east of Interstate 94 and north of Interstate 394 (Figure 4). Historically, the area was a residential neighborhood. Royalston Avenue ran north-south, and was lined with large houses. Holden Street and Royalston Avenue intersected at southern end of Royalston Avenue (Figure 5).

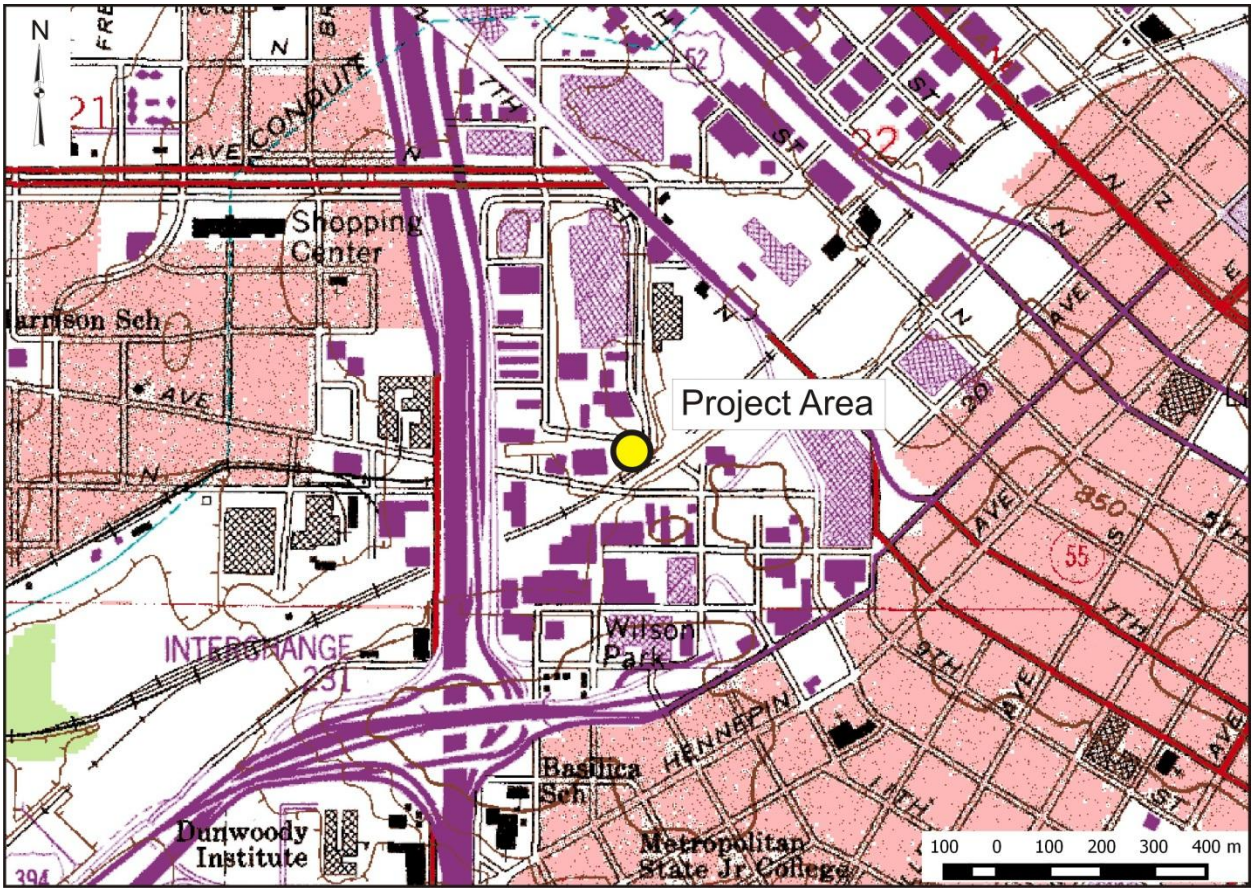


Figure 4. Map showing the location of the Holden-Royalston parcel.

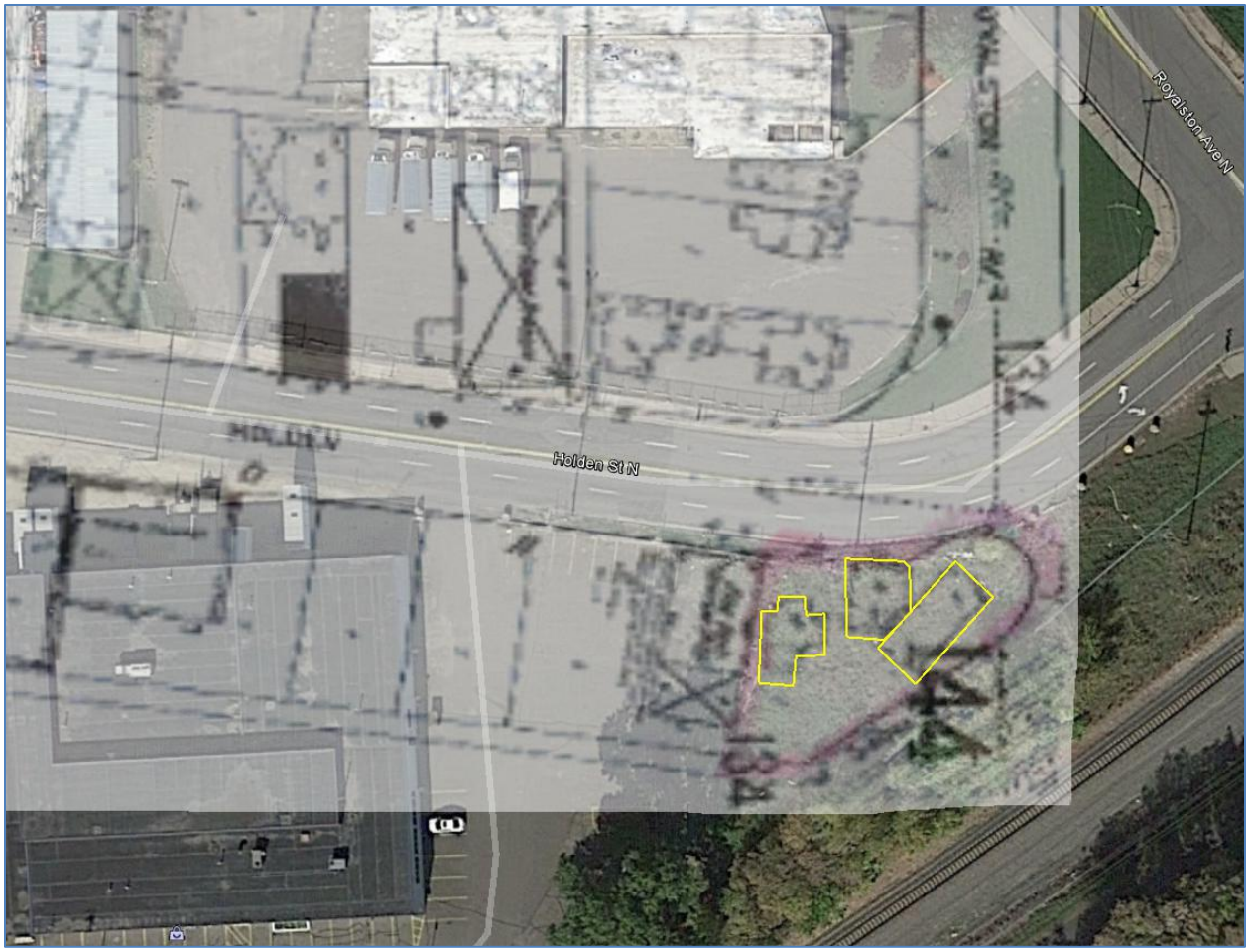

Figure 5. Modern aerial photograph with 1912 Sanborn map showing historic layout of Holden Street and Royalston Avenue with structures outlined in yellow.

The parcel is located in the Oak Lake Park Addition to Minneapolis, which was platted in 1873. This upscale neighborhood had large lots, curvilinear streets, and a small lake (Harrison and Peterson 2011). Nearby Lyndale Avenue was also slated as a future parkway, according to Horace Cleveland's 1883 Minneapolis park system plans. These factors made the newly established neighborhood highly desirable for upper-middle class families (Roise et al 2012).

In the mid-1870s, numerous professionals and business-owners including a lawyer and his clerk, a carriage manufacturer, meat market proprietor, and bookkeeper lived in the Oak Park Lake neighborhood (Minneapolis City Directory 1874). However, by the 1880s, the make-up of the area had become more economically mixed and residents included laborers, teamsters and dressmakers, as well as physicians, lawyers and implement dealers (Davidson 1880).

Unfortunately, the Oak Lake neighborhood never achieved its upper-middle class status due to increasing amounts of local traffic, poor soils for structural stability, and encroaching industries (Gronhovd, et al 2014; Roise et al 2012).

Between the turn of the century until the mid-1910s, numerous industrial complexes were built in the vicinity of the Oak Lake neighborhood, including N.E. Colstrom, a brick and mould machine manufacturer, the Munsingwear mills, a Cedar Lake Ice Company plant, a large coal yard, and the Minnesota-Western railroad extended a line through the area (Schmid 1937:79; Minneapolis City Directory 1883-4:9; Roise et al 2012).

The degradation of the park-like setting of the Royalston area and the influx of industry began to take a toll on the stature of the neighborhood. By 1919 a newspaper article stated that "the encroachment of industry is every year pushing farther and farther into the little group of homes that remain" (Harrison and Peterson 2011). As industry crept closer and closer, social changes occurred in the neighborhood.

The large houses were broken into multi-family housing, and home-owners began to rent out rooms, introducing a somewhat transient population, leaving the neighborhood unstable. By the 1930s many Jewish residents had moved into the community and, according to Schmidt , a 1930s historian, the properties were allowed to fall into disrepair, and "were kept habitable only with increasing attention" (Schmid 1937:77).

Schmid also asserts that African-Americans moved into the residences vacated by the Jewish, and "by 1920, a time when Minneapolis had a total Negro population of 3,927, Oak Lake was almost completely Negro" (Schmid 1937:78). He states that this shift from upper-middle class single-family homes to increasingly transient, high-density housing brought with it increased crime. "As is characteristic of areas undergoing transition a certain amount of vice and crime exists in Oak Lake. Prostitutes practice their profession in varying degrees, depending on police pressure, and the crime rate is one of the highest in the city" (Schmid 1937:79).

Research conducted on the Oak Lake neighborhood in 2013-2014 (Gronhovd et al. 2014) indicates that Schmid's 1937 social history of the Oak Lake area is partly, but not entirely accurate. The more recent research suggests that the Royalston neighborhood shifted from upper-middle class to solidly middle/working class in a matter of about a decade. Many of the workers occupied positions in a variety of minimally to fairly skilled professions, but a few residents were professionals in areas that required extensive education.

The neighborhood also clearly transitioned, at least partially, to a Jewish community, but there is no evidence that the Royalston neighborhood became entirely African-American as stated by Schmid. There is also no indication that the neighborhood was a center of vice. Many of the houses had long-term residents consisting of working-class families, at least half of the houses were owner-occupied, and none of the census entries have the appearance of potential brothels – in fact single, female tenants are relatively rare. Thus, although the Royalston neighborhood never achieved and maintained its upper-middle class status, background research does not support claims indicating that it was a hot-bed of nefarious behavior.

## Phase Ia Background Research

### *Archival and Documentary Research*

Background research for the Holden-Royalston parcel took place during the summer of 2014. This research indicates that a structure was first built on the parcel on June 30, 1887, although

the Minneapolis City Directory lists the R.D. Thomas and O.S. Frizzell grocery at the site in 1882. At this point the parcel's address was 32 Holden Avenue. The primary business at the location appears to have been a grocery store, with a variety of "boarders" and "residents" listed. Professions of those living at 32 Holden Street through the late 1800s include laborers, carpenters, a "practical horseshoer" confectioner, lumberman, clerk, and paperhanger (Minneapolis City Directories 1883, 1886, 1888, 1890, 1894, 1896).

In 1903 the parcel's address changed from 32 to123 Holden Street. Despite the address change, the parcel continues to host a grocery store and house boarders including, teamsters, laborers, a peddler, and even a clairvoyant (Minneapolis City Directories 1903, 1904, 1905, 1906, 1907, 1908, 1912, 1913, 1915, 1917, 1919, 1921, 1922).

Over the years, various contractors updated and added to the structure, but the City Inspector of Buildings records do not describe what these updates and additions included. In 1892, 1898, 1903, and 1914, Minneapolis City Directories indicate that two structures were located at the site. An 1885 Minneapolis City map (Hopkins) and a 1912 Sanborn map confirm that two structures and an outbuilding were located on the site. Based on the shape of the structures and information from the City Directories, these structures appear to have been a commercial building (grocery store) and a residence (Figure 6). City records indicate that the structures remained at the site through the 1920s. By 1930 the structures are listed as vacant, and by 1935 the structures appear to be gone (Minneapolis City Directories 1930-1935).

Figure 6. Hopkins (1885) map showing Holden-Royalston parcel.

### *LiDAR Data Analysis*

LiDAR data from the Holden-Royalston survey area were analyzed after processing and display using procedures summarized in Chapter 4. The objective of this examination was to search for topographic anomalies or potentially significant topographic patterning within each parcel. This analysis did not identify any potential archaeological earthworks or other topographic patterning of interest.

## Field Investigations

Field investigations included a Ground Penetrating Radar Survey, the excavation of one shovel test, and the excavation of two mechanical test units.

### *Geophysical Survey Results*

#### *Ground Penetrating Radar*

GPR data were collected from a triangular survey area measuring 30 m wide (grid east direction) by 24.5 m deep (grid north direction). The GPR data were processed and identified several potentially interesting anomalies. These anomalies were subsequently tested by excavation of two mechanical units and one shovel test (Figure 7). Plan view GPR survey results from various depths below ground surface was prepared following the survey (Figure 8). Based on the plan views, three anomalies were identified and targeted for testing (Figure 9).

Figure 7. Location of the GPR survey grid and mechanical units on a shaded relief LiDAR image of the parcel.

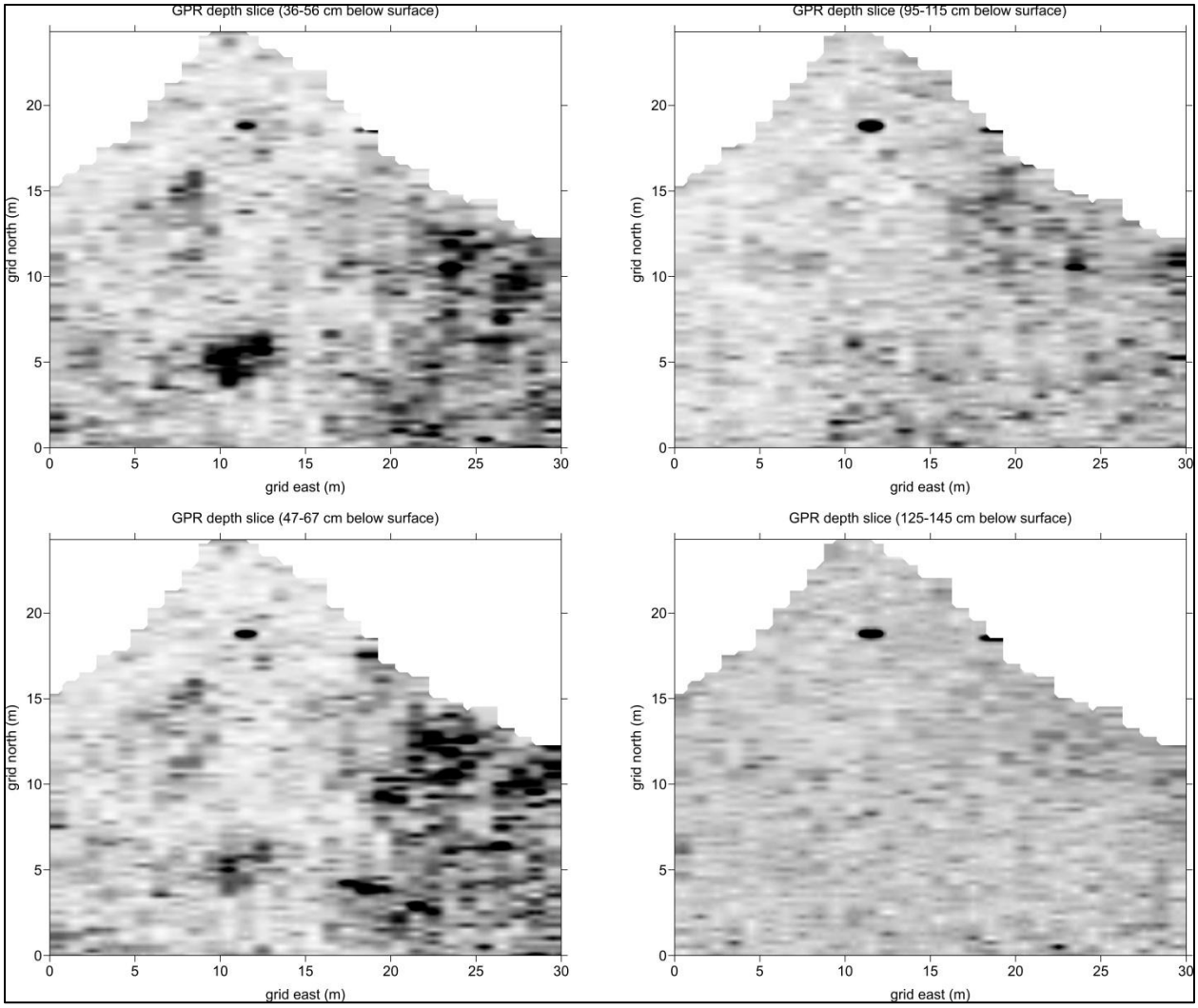

Figure 8. Plan view of the GPR survey results from various depths below ground surface.

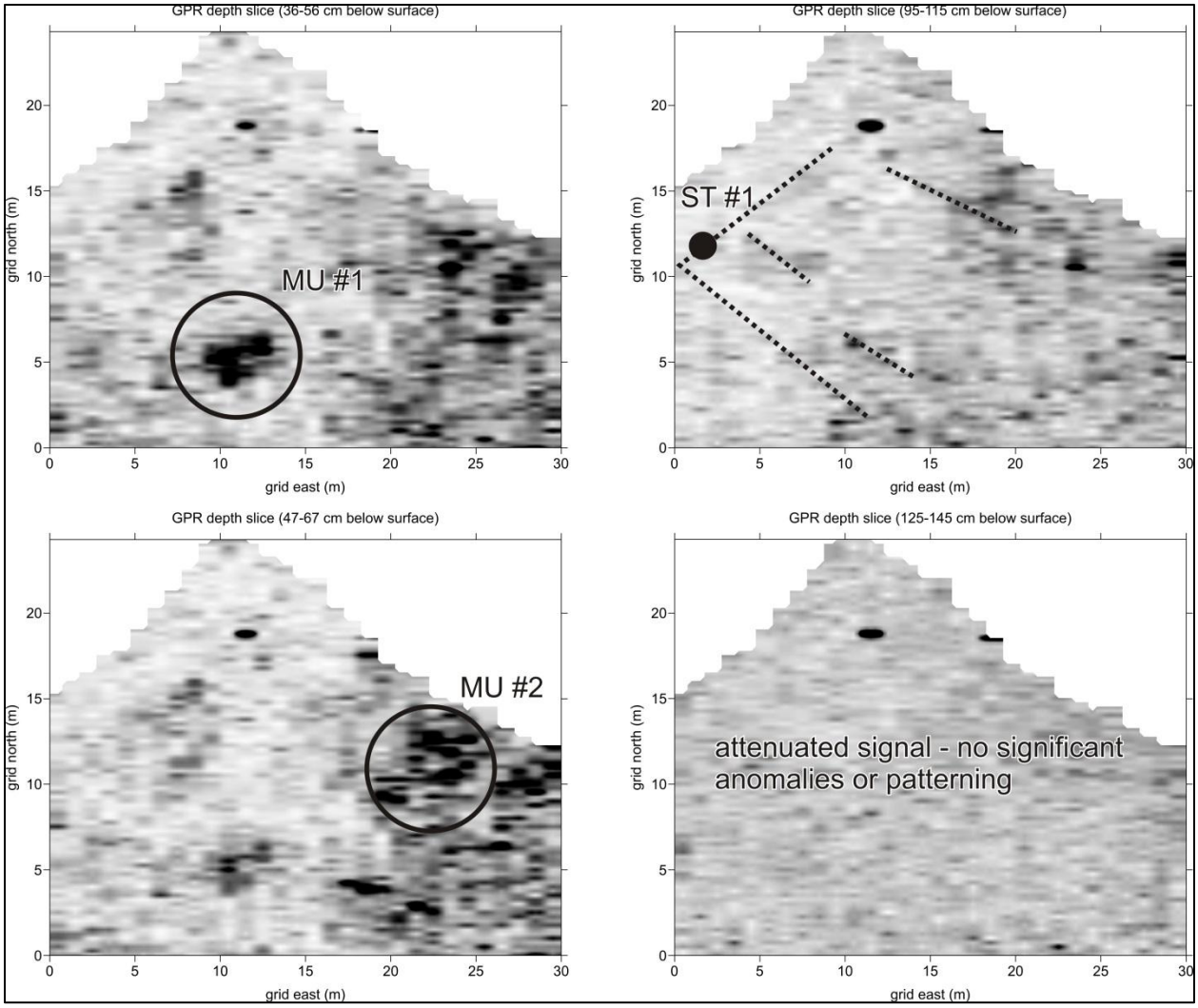

Figure 9. Location of three anomalies identified during the GPR survey.

***Field Survey***

The Phase I investigation involved a Ground Penetrating Radar survey of the project area, and excavation including a single shovel test and two mechanically excavated units. The shovel test was excavated in an attempt to determine the depth and nature of the soils within the parcel, and to test the source of faint linear patterning observed in the GPR data from between 95 cmbs and 115 cmbs. This test extended to a depth of 105 cmbs, and revealed modern fill (less than 50 years old) throughout. The soil profile of the shovel test consisted of brown sandy loam with large amounts of gravel and rocks over sandy mottled brown and dark brown fill. Deposits contained concrete, asphalt, plastic, glass, and wood. The shovel test did not locate undisturbed historic or pre-historic soils. No definitive source of the GPR linear patterning was identified in the shovel test. Because the patterning occurs at the interface between fill and underlying intact soils, it is considered likely that the linear patterning observed in the GPR data is associated with placement of the fill at the site.

In order to determine whether historic or prehistoric deposits existed under the fill, two additional test pits were mechanically excavated using a bobcat. These excavations were placed in areas that the GPR survey indicated potential archaeological features.

Mechanical Unit 1 was located toward the west side of the parcel in an area identified as a possible faint recti-linear anomaly by the GPR survey. The unit was placed on the edge of the anomaly and excavated to a depth of 220 cmbs. Although no source for the anomaly was identified, apparent historic deposits were located. Soil stratigraphy in Mechanical Unit 1 consisted of very dark brown chunky fill over dark and light brown mottled fill, over black sandy loam grading to brown sand. The fill contained a significant amount of modern garbage including plastic, glass, concrete, and asphalt. The black sandy loam grading to brown sand appeared to be the original ground surface. The black sandy loam contained historic artifacts such as molded glass, whiteware, cut bone, and oxidized metal artifacts. Artifact density diminished with depth.

Mechanical Pit 2 was located to investigate an amorphous anomaly identified by GPR. The Unit was located along the northern edge of the parcel, and extended to a depth of 156 cmbs. The soil profile consisted of 110 cm of fill over dark brown Sand over brown sand. The fill was mottled and contained modern debris with rocks, gravel, concrete and asphalt. Soils under the fill appear to be original ground surface and consist of dark brown sandy loam over brown sand, and contain cut bone, molded glass bottle fragments with ghost seams, ceramics, and oxidized metal.

Mechanical excavation of MU1 and MU2 determined the source of the observed GPR anomalies to be heterogeneities in the fill covering the site. This fill extended to a depth of approximately 1 m below surface. Profiles of the shovel test and both mechanical units were recorded and photographed. No artifacts were collected.

### *Holden-Royalston Recommendations*

Phase I investigations at the Holden-Royalston parcel indicate that an archaeological site dating to the period of the Oak Lake neighborhood is present and potentially intact under modern fill. Thus this site (21HE0452) could possibly shed light on research questions relating to the neighborhood and its residents. Phase Ia background research and Phase I testing at the Holden-Royalston parcel suggest the presence of a potentially eligible historical archaeological site. In order to assess site 21HE0452's eligibility for the National Register of Historic Places (NRHP), 10,000 Lakes Archaeology, Inc. recommends that a Phase II evaluation take place at this site.

# Chapter 6: Phase I Testing at Areas A and B

The Phase Ia background and archival research was conducted for these parcels in 2014 under a separate contract (Halvorsen and Bring 2014).

## LiDAR Data Analysis

LiDAR data from Areas A and B in Eden Prairie were analyzed after processing and display using the procedures summarized in Chapter 4. The objective of this examination was to search for topographic anomalies or potentially significant topographic patterning within each parcel. This analysis did not identify any potential archaeological earthworks or other topographic patterning of interest.

### *Field Survey*

The Phase I investigations at Areas A and B involved surface examination and shovel testing.

*Area A*

Area A is located in Eden Prairie, south of Highway 212, between Mitchell Road and Wallace Road, and the north and south sides of Technology Drive (Figure 10). Historically, the area was agricultural, and contained several small lakes/ponds/wetlands. Although the vicinity is quite developed, it was uncertain whether intact soils were present. To determine whether intact soils were present and whether these soils contained archeological deposits, shovel tests were excavated. These shovel tests were placed in 50-foot (15-meter) intervals in areas that appeared to potentially have intact soils, were not on a slope, and were not located in wetlands, within the project area.

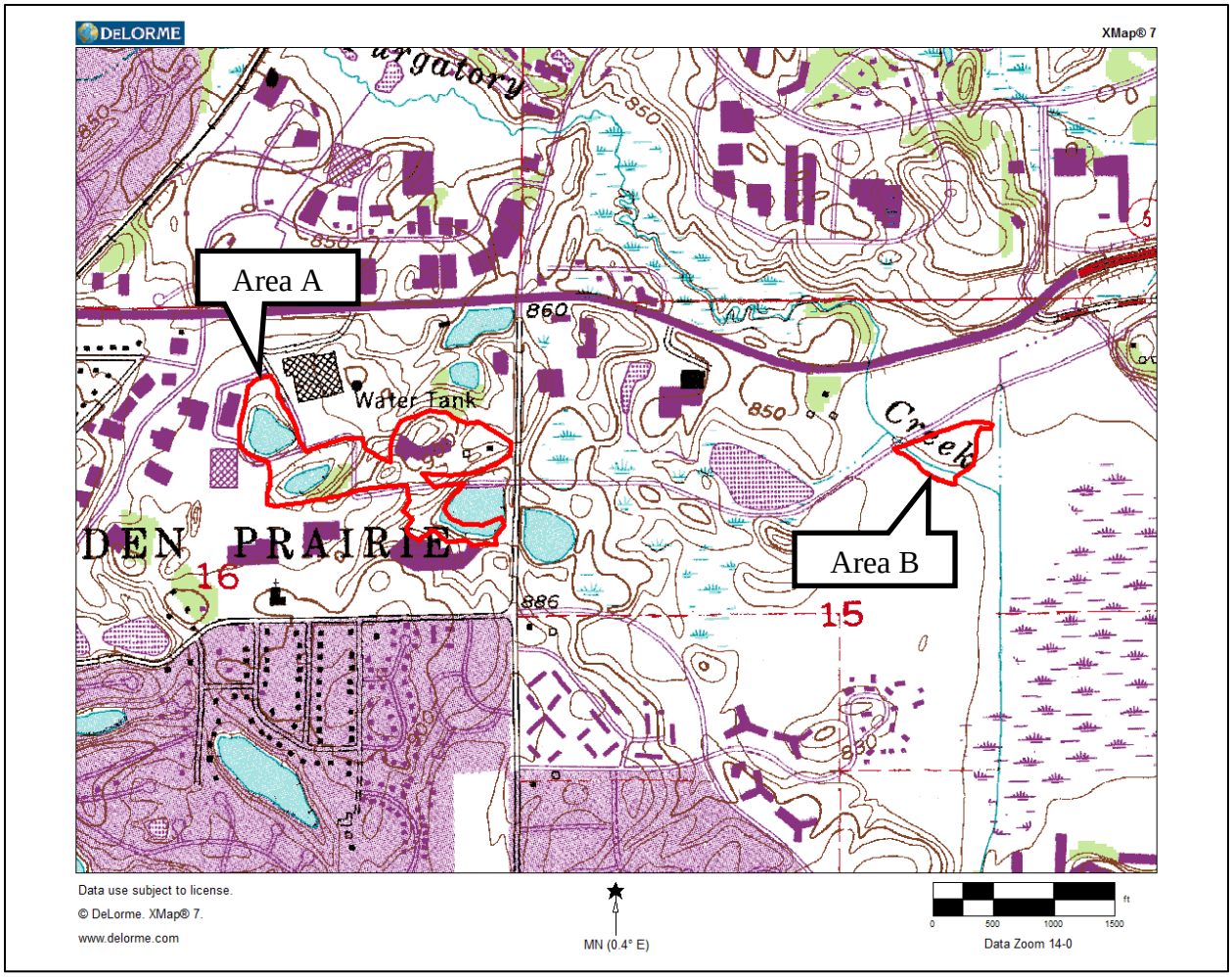

Figure 10. Map showing location of Areas A and B.

The first tested portion of Area A is south of Technology Drive around a small unnamed lake (Figure 11). Surface examination of the area indicated fairly significant disturbance to large portions of the ground, presumably during construction of the City Offices and parking lots located adjacent to the project area. Six shovel tests were excavated (identified in yellow in Figure 11) in locations where the landscape appeared to remain potentially intact. The shovel tests revealed inconsistent profiles and indicated heavy disturbance, presumably from earthmoving related to construction of the parking lots and buildings adjacent to the lake.

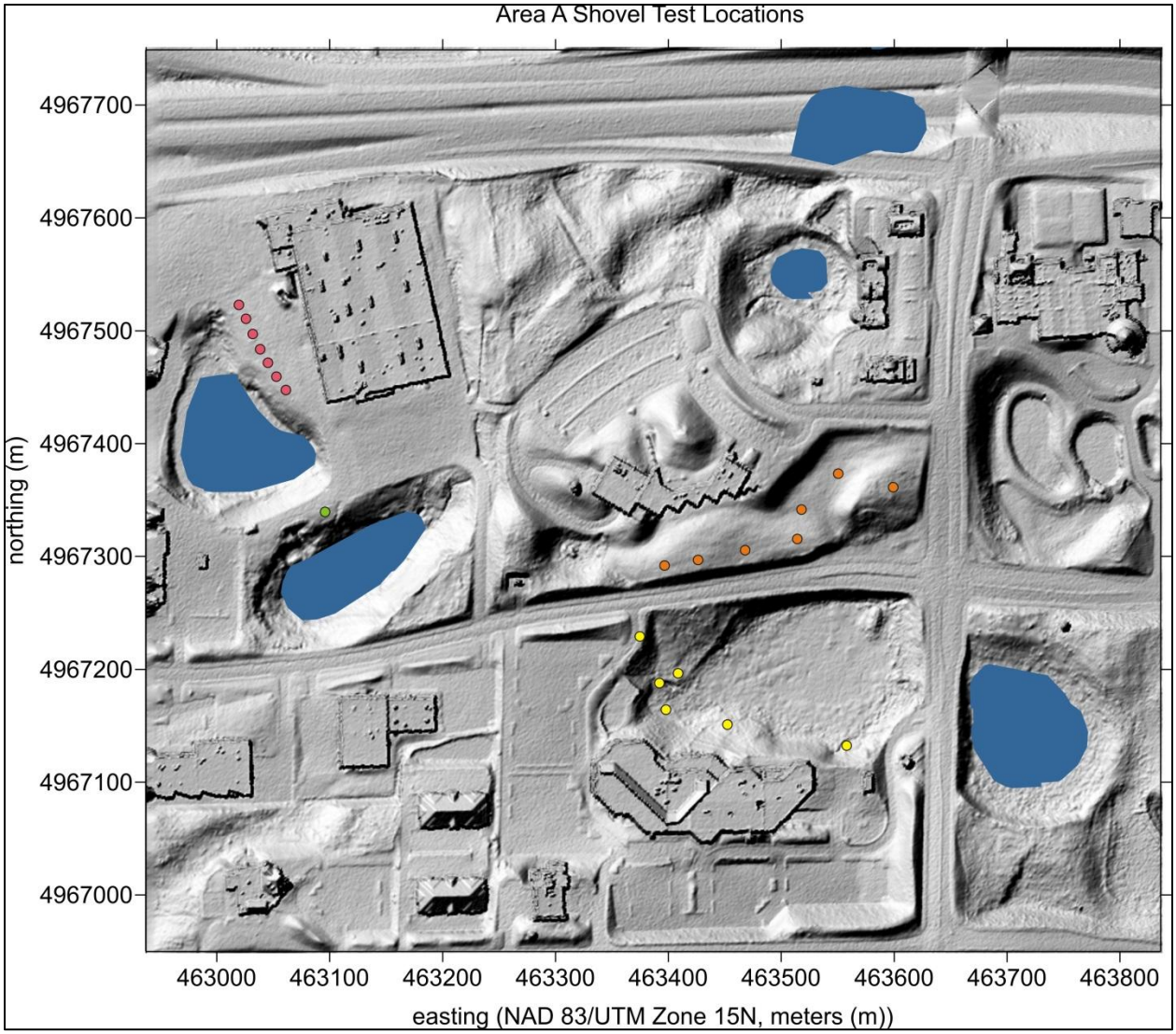

Figure 11. Area A showing shovel test locations on LiDAR map.

Fifteen shovel tests were excavated in three areas north of Technology Drive in Area A. The first seven shovel tests are northeast of a small lake (identified in pink in Figure 11), one is located north of a small wetland (identified in green in Figure 11), and seven are on a possible terrace overlooking a small lake to the south (identified in orange in Figure 11). These shovel tests indicated that the entire area had been significantly disturbed by earth-moving activity. Specifically, the area appears to have been cut down to sub-soil, then filled and landscaped. Soil profiles consisted primarily of dark brown sandy silty loam, over light brown sand, over silty sand with gravel and rocks increasing with depth. No artifacts were located during the investigations.

*Area B*

Area B is also located in Eden Prairie south of Technology Drive and east of Area A (see Figure 10). Historically, the area was agricultural, and Purgatory Creek flowed through the parcel. The south side of Technology Drive in this area currently contains a City park and trails, a wetland,

and a small lake. In an attempt to understand the development of the area, prior to initiating Phase I fieldwork, 10,000 Lakes Archaeology examined aerial photographs from Borchert Map Library and on Google Earth. These indicated that the stream west of Area B has been channelized, the drainage running through Area B was constructed between 1971 and 1991, and the lake southeast of Area B was constructed between April and December 2004 (Figure 12).


Figure 12. Aerial photographs showing landscape changes at Area B (blue).

To determine whether intact soils were present within Area B, and whether these soils contained archeological deposits, two shovel tests were excavated. Both shovel tests were placed near the channelized creek, and confirmed that the area has been extensively landscaped and filled. Both shovel tests also indicate that the area previously comprised a wetland, with soils consisting of black silty sandy loam over grey silty sand with gravel and numerous snail shells. Shovel tests began filling with water at a depth of approximately one meter. No artifacts were located during the investigations.

### Area A and Area B Recommendations

Due to significant recent construction and development in the area, Phase I investigations at Areas A and B did not locate any cultural deposits. Based on the results of the Phase I testing, no further archaeological investigation is recommended within Areas A or B.

# Chapter 7: Summary of Results and Recommendations

Three parcels were examined during the 2014 field archaeological investigations, resulting in the identification of one potentially significant archaeological site (number pending). This site is recommended for Phase II evaluation to determine whether it is eligible for the NRHP. This chapter summarizes the results and recommendations for each parcel tested.

## Area A

Twenty-one shovel tests were excavated in Area A. Shovel testing in this area revealed heavily disturbed soils apparently impacted by modern development and construction. No intact archaeological deposits were located during these investigations. No further archaeological investigation is recommended within Area A.

## Area B

Two shovel tests were excavated in Area B. These tests revealed soils disturbed by construction and development in the area. No archaeological deposits were located during these investigations. No further archaeological investigation is recommended within Area B.

## Holden-Royalston (21HE0452)

One shovel test and two mechanical units were excavated within the Holden-Royalston parcel. The shovel test did not locate historic deposits, but both of the mechanical units located deposits more than a meter below ground surface that appear to be the historic ground surface. Furthermore, these deposits appear to contain historic archaeological materials.

## Conclusions

In conclusion, the Phase Ia and Phase I investigations conducted in 2014 investigated three parcels that might be impacted by the proposed Southwest Light Rail Transit Project. No historic properties were identified during the archaeological investigations at Areas A and B. However, one historic site was located within the Holden-Royalston parcel. It is recommended that a Phase II evaluation of this site be conducted to determine eligibility for the National Register of Historic Places.

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# Appendix A: Southwest Transitway: A Research Design for Cultural Resources

# Southwest Transitway:
# A Research Design for Cultural Resources
**12 February 2010, updated 16 March 2010, 2 April 2010**

Prepared by
Charlene Roise, Hess, Roise and Company
Christina Harrison, Archaeological Research Services
Mike Justin, Mike Madson, and Joe Trnka, HDR Engineering

## INTRODUCTION

The Hennepin County Regional Rail Authority is proposing to construct the Southwest Light Rail Transit (SWLRT) facility, linking the Intermodal Station in downtown Minneapolis with the central business area in suburban Eden Prairie. The line is located within the cities of Minneapolis, St. Louis Park, Hopkins, Minnetonka, and Eden Prairie.

The Federal Transit Administration (FTA) has determined that the proposed project is an undertaking as defined by the National Historic Preservation Act (NHPA) and is subject to the provisions of Section 106 of the NHPA. Section 106 requires that federal agencies take historic properties into account as part of project planning. The Cultural Resources Unit (CRU) of the Minnesota Department of Transportation (MnDOT) is acting on behalf of FTA for many aspects of the Section 106 review process for SWLRT. The FTA has also determined that the SWLRT is subject to the National Environmental Policy Act (NEPA) and a Draft Environmental Impact Statement (DEIS) is being prepared by Hennepin County under the direction of the FTA.

Through the NEPA scoping process, four build alternatives were identified. To streamline subsequent analysis, these alternatives were divided into five segments. The following table, which was included in the draft "Southwest LRT Technical Memorandum No. 9: Environmental Evaluation" (September 9, 2009), outlines the segments that are associated with each of the alternatives:

| *Alternative* | *Segments* |
|---|---|
| LRT 1A | 1, 4, A |
| LRT 3A | 3, 4, A |
| LRT 3C-1 (Nicollet Mall) | 3, 4, C-1 (Nicollet Mall) |
| LRT 3C-2 ($11^{th}$/$12^{th}$ Street) | 3,4, C-2 ($11^{th}$-$12^{th}$ Streets), C-2A (Blaisdell Avenue), C-2B ($1^{st}$ Avenue) |

***Segment 1*** extends northeast from a station in Eden Prairie at TH 5 along a former rail corridor owned by the Hennepin County Railroad Authority (HCRRA) to a station at Shady Oak Road, on the border between Minnetonka and Hopkins.

***Segment 3*** creates a new corridor, running east from a station at Mitchell Road in Eden Prairie and turning northerly to terminate at the Shady Oak Station.

***Segment 4*** follows an existing rail corridor east-northeasterly from the Shady Oak Station through Hopkins and Saint Louis Park to the West Lake Station in Minneapolis, near that city's western border.

***Segment A*** continues northeast from the West Lake Station, mostly using an existing rail corridor, to the Intermodal Station on the western edge of downtown Minneapolis.

***Segment C*** also begins at the West Lake Station, traveling east along a former rail corridor (now the Midtown Greenway), north along one of several alternative courses under and on city streets, to and through downtown Minneapolis, and ultimately ending at the Intermodal Station or South Fourth Street. (For the purpose of this cultural resources assessment, all of the "C" variations will be considered as a single group.)

It should be noted that the above segments overlap at three points: the Shady Oak Station, the West Lake Station, and the Royalston/Intermodal Stations. When the results of the cultural resource surveys are sorted by segment, there will be redundancy in the findings at these three points. This redundancy is inevitable if the effects of each segment are to be analyzed. When a single alternative is selected, it will be necessary to eliminate duplicated properties to obtain an accurate representation of the effects of that alternative.

## PROPOSED METHODOLOGY FOR ARCHAEOLOGICAL RESOURCES SURVEY

Christina Harrison, Archaeological Research Services
Mike Justin and Mike Madsen, HDR Engineering

This work plan outlines a program to identify archaeological properties which meet the criteria of the National Register of Historic Places in the project's area of potential effect (APE), to be used in assessing potential effects to those properties. Three primary tasks comprise the work plan. First, in order to provide a uniform assessment of available data across the five project segments discussed in the DEIS, the project team will prepare a report (by project segment within a broad APE) to include: results of the literature search, an archaeological probability assessment, and a field survey strategy (Task 1). It is expected that a limited amount of field investigation/sampling may occur as part of this task depending upon the weather. Second, an archaeological inventory/evaluation of the selected alternative will be completed, using a refined APE based on proposed construction (Task 2). Finally, a report of the field investigations of the selected alternative and an assessment of effects will be prepared (Task 3).

Task 1 will involve archaeologists from both HDR and ARS. Support will be provided, as needed, by Hess Roise research staff as well as by geomorphologists and other paleoenvironmental experts provided by HDR. Division of responsibilities will partly depend on what survey needs are identified by the background research, but primary responsibility for precontact and contact period archaeology will rest with Christina Harrison (ARS) and Michael Justin (HDR), and for historic archaeology with Michael Madson (HDR). The personnel for Tasks 2 and 3 are pending.

The survey will be conducted in accordance with all federal, state, and local requirements, including the Minnesota Field Archaeology Act and the Minnesota Private Cemeteries Act.

**Area of Potential Effect (APE)**

The APE for archaeological resources is generally defined as the anticipated limits of construction activities. At this stage in the project development, factors influencing those limits have not yet been fully identified. The APE, starting with a broad area at first, will be refined as the engineering design advances.

For Task 1, the APE for the literature search and probability assessment will be based, as appropriate, on the project limits as defined in the project engineering drawings used to prepare the DEIS. This will include the full width of existing railroad right-of-way corridors as well as the area within 100 feet on either side of the current engineering alignments. The APE near station areas also includes any undeveloped and/or vacant property within 500 feet that could potentially be utilized for construction/development activities. Depending on the station location, these may include open, green spaces (particularly in suburban areas) and paved parking lots (particularly in urban areas).

If the literature search/probability assessment identifies potentially significant historic features or high probability areas immediately adjacent to the above-referenced APE parameters, and if the significance of potential sites in these areas is expected to relate to National Register criteria A, B, and/or C, the APE for the field strategy for the Phase I-II survey may be adjusted to include these locations.

During Task 2, the APE will be reviewed in light of more detailed engineering plans. Throughout the design phase of the project, the adequacy of the APE will be periodically evaluated and expanded or retracted as necessary as project elements are added or modified. The survey report specified in Task 3 will provide a clear delineation of the surveyed APE, including all additions, so that the adequacy of survey efforts can be readily determined when project changes are proposed.

It should be noted that, generally, the APE for archaeological resources is a smaller area located within the APE for history/architecture resources.

**Task 1. Report of Archival Review/Site Probability/Field Strategy**

This task will uniformly represent the readily available information across the five project segments discussed in the DEIS. In general the report will be a desktop analysis of existing archaeological research data supplemented by a discussion of probability for previously unidentified archaeological properties. Field inspections may be utilized to confirm existing conditions, particularly to inform the discussion on field survey strategies.

The desktop analysis will utilize documents on file at the State Historic Preservation Office (SHPO) and the Office of the State Archaeologist (OSA). Historic maps and aerial photographs, local histories, and other archival information on file at the Minnesota Historical Society, the Borchert Map Library (at the University of Minnesota), and local libraries and historical societies may also be reviewed.

The task will review:

- archaeological survey reports on file at SHPO, OSA and other repositories in order to establish what segments of the project routes have already been inventoried according to current standards;
- known archaeological sites and/or (if applicable) recommendations/confirmations of NRHP eligibility;
- relevant USGS topographic maps and soil surveys as well as any Mn/Model information and other environmental and paleoenvironmental data pertinent to the assessment of pre-contact archaeological site probability, including land use histories;
- Historic maps and aerial photographs to identify localities with historic-period archaeological site potential.

A preliminary field review will be conducted. The survey team will document visible indications of topographic and hydrological features as well as past and current land use with concomitant loss of soil integrity. The information from field observations will be combined with the data gathered during the archival review to propose archaeological site probability along the five segments.

Pre-contact and historic-period contexts will be briefly reviewed, with a focus to inform the discussion of site types and assessment of probability. The probability assessment will be organized by the five project segments (1, 3, 4, A, and C). For each of the five segments the report will include:

- a general description of the APE;
- a discussion of previous surveys and previously identified sites;
- a discussion of historic site types and the associated conditions that may indicate a historic property;
- a discussion of archaeological probability (for pre-contact/contact period and historic-period), and;
- a survey strategy and methods, including specific places targeted for field investigation.

The survey strategy for precontact and contact period evidence will be guided by Native American and early Euro-American settlement and land use patterns identified by previous archaeological investigations in the vicinity including, for example, the 1992-1994 city-wide cultural resource survey of Eden Prairie, the corridor surveys conducted for Trunk Highway 212 and Trunk Highway 12, and a number of smaller scale compliance surveys conducted within the Nine Mile, Minnehaha and Purgatory Creek watersheds.

The results of Task 1 will be summarized in the DEIS.

**Task 2. Inventory/Evaluation (Phase I-II) Survey**

For the Inventory/Evaluation survey, the APE will be refined to reflect the updated engineering design. That refined APE will be surveyed in a manner consistent with the recommendations presented in the Task 1 report. Field methods outlined in the Minnesota SHPO and MnDOT CRU guidelines will be generally followed; any exception, as well as more detail specific to the existing conditions along each segment, will have been documented in the Task 1 report.

In the case of precontact/contact period Native American evidence, the field sampling will involve standard methods for identification and the preliminary assessment of horizontal and vertical site dimensions, integrity, and National Register potential. In addition, the survey may utilize targeted geomorphological testing and analysis in areas likely to feature deeply buried archaeological evidence.

Artifacts will be collected and analyzed in a manner consistent with contemporary standards. Artifacts from private property will be collected with written permission of the landowner. Historic period artifacts will only be collected if they appear to represent a potentially significant archaeological property.

Archaeological sites determined to have National Register potential will then require more comprehensive Phase II formal testing. As the Phase I review more than likely will have identified a wide range of site types associated with highly varied environmental settings and precontact to historic period contexts, the scope, research questions, field and analytic needs will be more appropriately defined at that stage of the investigation.

**Task 3. Analysis and Reporting**

A technical report of the Phase I and Phase II investigations, including the methodology, field work results, and recommendations, will be prepared in accordance with the guidelines of MnDOT's CRU, the Secretary of the Interior's Standards for Identification and Evaluation, and other applicable state and federal guidelines. This includes submittal of Geographic Information Systems (GIS) data per the CRU guidelines. All sites documented during the survey will be recorded on new or updated Minnesota Archaeological Site Forms.

Collected artifacts will be processed and analyzed in compliance with the survey guidelines of the SHPO and the Mn/DOT CRU. Artifacts will be curated at an approved facility as stipulated in the consultant's archaeology license.

## PROPOSED METHODOLOGY FOR HISTORY/ARCHITECURE RESOURCES SURVEY

Charlene Roise, Hess, Roise and Company

### Area of Potential Effect (APE)

Generally, the APE for history/architecture resources extends 300 feet on either side of the centerline of the alignment of each corridor. Around each station, the APE includes property within a quarter-mile radius. This area addresses anticipated project-related infrastructure work and reasonably foreseeable development.

The APE is illustrated in maps of the five project segments. Exceptions to the parameters outlined above include the following:

- The APE for the Intermodal Station (in segments A and C) includes all property within the boundaries adopted for the "Downtown Minneapolis Transit Hub" Environmental Screening Report (October 28, 2009 review draft) prepared for Hennepin County by Kimley-Horn and Associates. The area shown in the report is extended northeast of Washington Avenue to and across the Mississippi River to include the first tier of properties on Nicollet Island, to provide adequate APE coverage for the three-block potential station area and related developments such as rail storage yards. This area addresses infrastructure work associated with the SWLRT project as well as cumulative effects related to the development of the Intermodal station. (See below for discussion about splitting responsibility for survey of this area between the SWLRT project and the Intermodal Station project.)

- The APE for the 4th Street, 8th Street, 12th Street, Harmon Place, Hawthorne Avenue, Lyndale, and Uptown Stations (in segment C) includes the adjacent blocks in all directions from the station. This area is proposed for the stations in the more densely-built urban area, in comparison to the larger quarter-mile radius for other stations in outlying areas.

- The APE for the proposed tunnel area under Blaisdell, Nicollet, or First Avenues, including the 28th Street and Franklin Stations (in segment C), extends from one-half block west of Blaisdell Avenue to one-half block east of First Avenue. If this alternative is selected, the APE may need to be expanded in light of the design and construction methods for the tunnel.

- Along some portions of the corridor, the 300 foot APE may be extended to take into account visual effects. For example, if the 300 foot area comprises open space, and a row of buildings is located beyond, these buildings may be included in the APE.

- In some station areas, there are known areas of project related work and/or anticipated development outside of the quarter-mile radius, and these areas are included in the APE. This includes areas in downtown Hopkins.

The APE may also be adjusted if a field surveyor recommends that the project may affect a property or properties not included in the established APE boundaries.

As project planning proceeds, additional factors will be assessed to determine if there are other effects (direct, visual, auditory, atmospheric, and/or changes in use) which could require an expansion of the above APE. These factors include:

- Noise analysis, including areas where the use of bells and whistles is anticipated.
- Vibration analysis, including vibration related to project construction and operations.
- The specific locations of project elements, including operations/maintenance facilities, park-and-ride facilities, traction power substations, signal bungalows, and other infrastructure.

**Survey Approach**

*Survey Zones*

The project cuts through a number of distinct communities, each with a unique history. As a result, these communities, which share similar physical and historical characteristics, can serve as a framework for conducting the survey. The survey will be organized around the following zones (related project segments and stations are listed in parenthesis):

- Eden Prairie (Segments 1 and 3; Highway 5, Highway 62, Mitchell Road, Southwest Station, Eden Prairie Town Center, Golden Triangle, City West Stations)
- Minnetonka (Segments 1 and 3; Rowland, Opus, Shady Oak Stations)
- Hopkins (Segment 4; Shady Oak, Hopkins, Blake Stations)
- Saint Louis Park (Segment 4; Louisiana, Wooddale, Beltline Stations)
- Minneapolis west residential, including parts of Bryn Mawr, Lowry Hill, East Isles, Kenwood, Cedar-Isles-Dean, and West Calhoun neighborhoods (Segments A and C; West Lake, 21st Street, Penn Stations)
- Minneapolis south residential/commercial, including parts of the Stevens Square/Loring Heights, Whittier, Lowry Hill East, East Isles, and Cedar-Isles-Dean neighborhoods and the Midtown Greenway (Segment C; Uptown, Lyndale, 28th Street, Franklin Stations)
- Minneapolis downtown north of I-94 (Segment C; 12th Street, 8th Street, 4th Street, Harmon Place, Hawthorne Avenue Stations)
- Minneapolis industrial (Segments A and C; Van White, Royalston Stations)
- Minneapolis warehouse (Segments A and C; Intermodal Station)

In addition, there are four railroad corridors that traverse these community boundaries. These corridors will be considered as four individual zones. The corridors (by historic names) are:

- Minneapolis and Saint Louis Railway (Chicago and North Western Railway). Part of the main line is in the APE (Segments 1, 4, A and C). A segment of this line between downtown Minneapolis and Merriam Junction has recently been evaluated by the Surface Transportation Board as not eligible to the National Register; however, the SHPO did not concur with this finding. The line will be further evaluated, focusing on the section within the APE.
- Chicago, Milwaukee and Saint Paul Railway (Milwaukee Road), Benton Cutoff. Part of the CM&SP Benton Cutoff is in the APE (Segments 4, A, and C). Except for the Chicago, Milwaukee and Saint Paul Railroad Grade Separation Historic District, which is listed in the National Register, the Benton Cutoff has previously been determined as not eligible to the National Register by the Federal Highway Administration, with concurrence by the SHPO.
- Saint Paul and Pacific Railway (Great Northern Railway). Part of the main line is in the APE (Segment A). This line will be evaluated.
- Minneapolis, Northfield and Southern Railway. Part of the Auto Club-Luce Line Extension of the MN&S is in the APE (Segment 4). This line has been previously evaluated by Mn/DOT CRU, and the Auto Club-Luce Line Extension has been recommended as not eligible to the National Register. This determination has not been submitted to SHPO for concurrence. The Mn/DOT CRU evaluation will be summarized and incorporated into this survey by reference.

All of the above lines, including those which have been evaluated as not eligible, will be inventoried and evaluated to identify any railroad related features in the APE that are potentially significant in their own right. The statewide railroad context developed by Mn/DOT CRU will serve as a basis for evaluation of railroad resources.

The survey of the above thirteen zones will be completed by three consultants. Hess Roise will complete the surveys for the five zones in Minneapolis, Mead & Hunt will complete the surveys for St. Louis Park, Hopkins, Minnetonka, and Eden Prairie, and Summit Envirosolutions will complete the surveys for the four railroad zones. Each consultant will prepare a report for the Phase I-II survey of the zones completed. An overall summary, integrating the survey results from all thirteen zones, will be prepared for the analysis of effects, within the framework of the five project segments.

The survey will include properties built in 1965 and earlier. Although National Register guidelines use a 50-year cut-off for eligibility (except for properties of exceptional importance), adopting a 45-year cut-off for this survey provides 5 years for project planning before the survey becomes outdated.

NOTE ON RESPONSBILITY FOR SURVEYS IN THE INTERMODAL STATION AREA: There is an overlap of the APEs for the SWLRT project and the Intermodal Station project (currently in the planning stage). The SWLRT survey effort will complete survey work for only

a portion of the SWLRT APE in the vicinity of the Intermodal Station, including where SWLRT construction is anticipated. The remainder of this area will be surveyed as part of the planning for the Intermodal Station project. The survey results from the Intermodal Station survey will be included in the consideration of cumulative effects as part of the SWLRT Section 106 review. (See map for the division of survey responsibilities in this portion of the SWLRT APE.)

**Phase I Survey (Reconnaissance Survey)**

The primary goal of Phase I is to identify properties that appear to have the potential to qualify for the National Register and merit further analysis. This will eliminate from further consideration any properties that have little or no potential to meet National Register criteria. The Phase I survey will also verify that properties already listed or officially determined eligible for listing in the National Register still retain integrity.

*Literature Search*

The literature search will focus on areas within the APE, with broader contextual information procured as needed. The literature search will begin by collecting existing reports and research for each zone. Maps, atlases, and other information that can provide specific information about property within the APE for archaeology will be a high priority. Additional research will be conducted for specific areas, and occasionally on specific properties, as appropriate. The literature search will produce:

- A working set of research files, including maps and related materials, for each zone. A copy of these files will be provided to the archaeological team.
- For each zone, a brief context (perhaps with subcontexts) will be developed that is approximately two to five pages in length and comprises a brief narrative, an annotated list of relevant property types, and a preliminary period of significance. (This assumes that extensive narrative contexts will not be developed during this phase.) A similar context will also be prepared for each railway, focusing specifically on segments in the APE. These contexts will also be provided to the archaeological team.

*Fieldwork*

A project-specific inventory form will be developed. Prior to the onset of fieldwork, a draft inventory form will be submitted to the client for review and approval.

The Hennepin County property database provides building construction dates for tax parcels. These dates will be assumed to be generally reliable for properties erected in the last half of the twentieth century, and will therefore be used to eliminate properties built after 1965 from the survey. During fieldwork, however, surveyors will be observant of properties eliminated from the inventory to identify:

- Inaccuracies: Properties not included in the survey that appear to date from 1965 and earlier (in other words, instances where the county date appears to be incorrect);
- Incomplete data: Properties not included in the survey that contain multiple buildings or other features, where the county date may refer to a newer feature—but older features are also present;
- Exceptional properties: Properties dating from 1966 or later that might be of exceptional importance.

Fieldwork will be conducted by zones. The methodology for each zone is as follows:

- Using information from the Hennepin County database, surveyors will be provided with a spreadsheet listing all properties in the zone built in 1965 or earlier. In addition to the address and year built, the spreadsheet will include the property's use and the name of the owner and taxpayer. The survey will include properties listed or officially determined eligible for listing in the National Register (including those in historic districts) to verify that they retain integrity. Map books will be prepared for reference in the field.
- Surveyors will conduct site visits for each property, recording observations from public rights-of-way with field notes and digital photographs. At a minimum, surveyors will record information on noteworthy features and the property's integrity. Using the data categories for functions and uses outlined in the National Register bulletin *How to Complete the National Register Registration Form*, and with reference to the context information for each zone, the surveyor will suggest data categories that seem the most appropriate for evaluating the property's National Register potential. The surveyor will also provide a preliminary recommendation—and a justification for that recommendation—stating that 1) the property does not appear to be eligible for the National Register, or 2) the property should be evaluated in Phase II.
- All field surveyors will meet the Secretary of the Interior's Professional Qualifications Standards.

*Deliverables for Phase I survey*

- For each zone:
    - Synopsis for each zone, including the context and property type information.
    - Table of surveyed properties including recommendations for intensive level survey, with justification.
    - Inventory form (2 copies) for each property in the APE built in 1965 or earlier. In addition to the data collected in the field, the inventory forms will incorporate information on the property's location (UTM reference, township/range/section) from the county database. At least one color digital photograph of the property will be included on each form. (NOTE: For properties which go to a Phase II evaluation, the same survey form should incorporate the evaluation information.)
    - Map of zone with properties recommended for intensive-level survey identified.

**Phase II Survey (Intensive)**

The goal of Phase II is to evaluate properties, as recommended in Phase I, to determine which meet the criteria of the National Register of Historic Places. As with Phase I, the work will be organized by zones.

*Literature Search*

The literature search will focus on individual properties and districts that have potential to meet National Register criteria. To provide a framework for evaluating some properties, it may be necessary to expand the context synopses developed in Phase I to address specific physical areas, eras, and/or property types.

*Fieldwork*

Additional field work may be needed to evaluate the physical characteristics of individual properties and districts. It might be necessary to obtain permission to enter some properties for this evaluation—if, for example, there is the potential for a significant interior space, or if a parcel is large and contains a number of buildings and these buildings cannot be adequately evaluated from the public right-of-way, aerial photographs, or other means.

*Deliverables for Phase II survey*

- For each zone:
    - Table of Phase II properties, including recommendations on eligibility.
    - More detailed inventory form, including the narrative evaluation of eligibility, for each property included in this phase.
    - Map of zone, showing properties that appear to qualify for the National Register identified, along with listed and previously determined eligible properties.
- A Phase I-II survey report (for all zones completed by the same consultant) conforming to Mn/DOT CRU Architecture/History Report requirements and other applicable federal and state guidelines.

At the conclusion of all Phase II history/architecture survey work, a consolidated summary/table incorporating the work from all thirteen zones will be prepared for the analysis of effect. This summary will be organized by the five project segments.

## Appendix B: Holden-Royalston Phase Ia and Phase I, and Areas A and B Phase I Proposal

# Phase Ia Research at the Royalston-Holden Location, and Phase I Archaeological Surveys of Two Areas in Eden Prairie, Minnesota for the Southwest Light Rail Transit Project

## Project Team

Amanda Gronhovd of *10,000 Lakes Archaeology, Inc.* meets the Secretary of the Interior's Standards for archaeological investigations, and will manage and serve as Principal Investigator for this project. David Maki of *Archaeo-Physics* will conduct all mapping and GIS-related expertise. Ryan Grohnke of *Westwood Professional Services* will assist with fieldwork and reporting (resume attached).

## Royalston-Holden Location

The proposed project area is located on the southern end of Royalston Avenue, at the junction of Holden Street, in Minneapolis. This Phase Ia research will examine archival and documentary information to help determine the likelihood of archaeological materials being present within the project area. Costs for a Phase I survey have also been included in this cost estimate, although this work is not authorized at this time.

### Scope of Work

*Literature and Archival Research*

*10,000 Lake Archaeology* will conduct literature and archival research in an attempt to determine the land use history of the Royalston-Holden location. This research will primarily be conducted at the Minnesota Historical Society (MHS), the University of Minnesota's Borchert Map Library, and Hennepin County Library, as appropriate. Archaeologists will examine sources such as topographic maps, historic maps, and aerial photographs during the research.

### Report

*10,000 Lakes Archaeology* will write a report that includes a description of the project area, results of the background research, and recommendations regarding potential for unrecorded archaeological deposits at the location.

## Areas 2 and 3 (and Royalston-Holden location, if requested)

Areas 2 and 3 are located south of Highway 212 in Eden Prairie. These Phase I surveys will determine whether cultural resources are present within the proposed project areas, and whether these resources are potentially eligible for the National Register of Historic Places (NRHP).

### Scope of Work

*Project Management*

*10,000 Lake Archaeology* will conduct a kick-off meeting within 7 days of amendment execution, and assumes up to four additional project meetings. *10,000 Lakes Archaeology* will also provide information to the Council to facilitate their endeavor to obtain right-of-entry access, as requested. Weekly updates will be submitted to the Council using the e-Builder system.

*Literature and Archival Research*

The team assumes that the background and archival research for these areas has been completed and thus no additional documentary research will be conducted as part of this project.

*Phase I – Areas A & B*

Based on aerial photographs, it appears as though the proposed project area consists of grass and wooded areas, leaving less than 25% of the ground surface visible. If this is the case, the team will use primarily shovel testing to determine the presence or absence of archaeological materials. If areas with more than 25% visible ground surface exist, *the team* will also conduct a pedestrian surface survey.

Specifically, archaeologists will excavate shovel tests in areas with low to no surface visibility. These excavations will measure 30 to 40 centimeters in diameter and be placed at 15-meter intervals, as appropriate and determined by the Principal Investigator. As the soil is removed, it will be screened through ¼-inch mesh hardware cloth to determine if cultural materials are present. In areas where more than 25% of the ground surface is visible, archaeologists will walk over the area in five to 15-meter intervals while examining the ground surface for archaeological materials or features. All excavations and survey areas will be mapped using GPS and entered into GIS.

*Phase I – Royalston-Holden*

The Royalston-Holden project area also has less than 25% of the ground surface visible. In order to determine if intact and significant cultural deposits are present at his location, a single shovel test will be excavated to assess soil conditions and whether fill covers the site. If no significant fill covers the site, the team will shovel test select locations areas to determine the presence or absence of historically significant archaeological materials. These excavations will measure 30 to 40 centimeters in diameter and be placed in areas having the potential to contain historic deposits. As the soil is removed, it will be screened through ¼-inch mesh hardware cloth to determine if cultural materials are present.

If deep fill deposits cover the site, the team will have the fill mechanically stripped from select areas in an attempt to locate historic deposits. Once the fill has been stripped, the nature and significance of historic deposits will be assessed.

*Phase II – Area A or B*

A Phase II evaluation will take place, if deemed appropriate. This evaluation will involve the excavation of up to four formal 1x1 meter test units within Area A or B in an attempt to determine the nature and extent of the site. These units will be placed in locations thought to hold the highest potential to yield archaeological information. Units will be excavated in five to 10 centimeter levels, and soil will be screened though 1/4 –inch mesh hardware cloth.

Archaeologists will keep detailed notes on standardized forms. These records will include information such as soil type, weather conditions, sketch maps, artifacts recovered, and the depths from which the artifacts were recovered.

*Phase II – Royalston-Holden Location*

A Phase II evaluation will take place, if deemed appropriate. This evaluation will involve the excavation of up to four formal 1x1 meter test units in an attempt to determine the nature and extent of the site. These units will be placed in locations thought to hold the highest potential to yield archaeological information. Units will be excavated in five to 10 centimeter levels, and soil will be screened though 1/4 –inch mesh hardware cloth. If the site is covered by a significant amount of fill, a backhoe will be employed to remove the fill to the depth of the historic deposits.

Archaeologists will keep detailed notes on standardized forms. These records will include information such as soil type, weather conditions, sketch maps, artifacts recovered, and the depths from which the artifacts were recovered.

*Mapping and Artifact Processing*
All features and excavation locations will be mapped using GPS and GIS, and sites will be documented on a Minnesota Archaeological Site Form. Artifacts located during the survey will be collected and returned to the lab for analysis, as appropriate and at the discretion of the Principal Investigator. During analysis, the artifacts will be washed, cataloged, and accessioned to MHS standards. Curation costs at MHS are included in this cost estimate and assume one small, precontact, and one historic site archaeological site. All field and lab work will conform to the guidelines set forth by the Minnesota SHPO and MHS Curation Department.

**Report**
The report will include a description of the project area, results of the archaeological survey, and recommendations. If a site is discovered, the Principal Investigator will make recommendations as to its potential eligibility to the NRHP. The draft report will be submitted by uploading the report to the e-Builder system, and submitting two CDs. The final report will be submitted by uploading the report to the e-Builder system, and submitting two CDs and 10 hard copies to the Council.

Upon completion of the project, all GIS data will be submitted to MnDOT CRU following the MnModel requirements.

**Assumptions**
- Weather does not pose a significant obstacle for fieldwork or travel (rain, flooding, excessive heat);
- No human remains are encountered;
- No more than two small archeological sites are located.

## Appendix C: Phase I Archaeological License

## APPLICATION FOR MINNESOTA
## ANNUAL ARCHAEOLOGICAL RECONNAISSANCE SURVEY LICENSE

This license only applies to reconnaissance (Phase I) surveys conducted under Minnesota Statutes 138.31-.42 during calendar year 2011. Separate licenses must be obtained for site evaluation (Phase II) surveys, for major site investigations (Phase III), for burial site authentications under Minnesota statutes 307.08, and for survey work that will continue into another calendar year. Only the below listed individual is licensed as a Principal Investigator, not the institution/agency/company or others who work for that entity. The licensed individual is required to comply with all the conditions attached to this license form. Permission to enter land for the purposes of archaeological investigation must be obtained from the landowner or land manager.

Name: Amanda Gronhovd

Institution/Agency/Company Affiliation: 10,000 Lakes Archaeology, Inc.

Title/Position: President and Principal Investigator

Address: 220 9th Ave South, South Saint Paul, MN 55075

Work Phone: 612-670-6431 E-Mail: Gronhovd@10000LakesArchaeology.com

Name of Advanced Degree Institution: Michigan Technological University Year:2001

Name of Department: Social Sciences Degree: __MA X MS __PhD

Purpose: (check all that may apply)
CRM X Academic Research ___ Institutional Field School ___

Type of Land: (check all that may apply)
State Owned X County Owned X Township/City Owned X
Other non-federal public X List: _____

MHS Repository Agreement # ~~requested~~ 649 Other Approved Curation Facility:_____

Previous License: Year 2013 Type _____ Number 13-064

Signed (applicant): Amanda Gronhovd Date: 3/26/2014

Required Attachments: *Curriculum Vita* ___ and Documentation of Appropriate Experience ___ for previously unlicensed individuals.

Submit one copy of this form and attachments to:
Office of the State Archaeologist, Ft. Snelling History Center, St. Paul, MN 55111
612-725-2411 612-725-2729 FAX 612-725-2427 email: mnosa@state.mn.us

Minnesota Historical Society Approval: _____ Date: 3-31-14
State Archaeologist Approval: _____ Date: 3/31/14

License Number: 14-036

Form Date: 2/15/11