Appendix F

Phase 1 Archaeological Reconnaissance Survey

A REPORT FOR PHASE I ARCHAEOLOGICAL SURVEY

Midwater Energy Storage Project

Freeborn County, Minnesota

AUGUST 28, 2024

PREPARED FOR:

spearmint

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Phase I Archaeological Survey

Midwater Energy Storage Project

Freeborn County, Minnesota

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Abstract

Midwater BESS, LLC (Midwater) contracted Westwood Professional Services, Inc. (Westwood) of Minnetonka, Minnesota to conduct a Phase I Archeological Survey for the proposed Midwater Energy Storage Project (Project) in Shell Rock Township, Freeborn County, Minnesota. The Project Area, planned to be an up to 150 MW Battery Energy Storage System (BESS), encompasses 104.4 acres of privately owned, predominantly agricultural land. The final Project design is expected to occupy approximately 16 acres which constitutes the Area of Potential Effects (APE). The remaining 88.3 acres are not hosting Project facilities and are considered unused land for Project purposes. Midwater BESS LLC plans to construct the Project on a schedule with a commercial operation date by the fourth quarter of 2027.

Prior to conducting the fieldwork, Westwood Cultural Resources Manager Ryan Grohnke examined files maintained by the Office of the State Archaeologist (OSA) and the Minnesota State Historic Preservation Office (SHPO) on July 3, 2024. Based on this review, no previously recorded cultural/archeological resources are present in the Project Area, with only a single site recorded in the one-mile buffer. The one-mile buffer encompasses 3,267.63 acres surrounding the Project Area.

Fieldwork was carried out by Westwood Principal Investigator Rigden Glaab and Archaeological Technicians William Christensen, Emory Worrell, and Lindsay Schwartzkopf between June 6 and 11, 2024. Rigden Glaab returned to complete an additional sample of shovel testing on June 25 and 26, 2024. Mr. Glaab meets the Secretary of the Interior's Professional Standards for Archaeology, as stipulated in 36 C.F.R. Part 61, and served as Principal Investigator for the Project. Ground surface visibility (GSV) across the entire Project APE was less than 5% at the time of survey, necessitating shovel testing along with visual survey of the Project.

No archaeological resources were identified within the Project APE by Westwood archaeologists during the Phase I Survey and no further work is recommended for the Project at this time. No National Register of Historic Places or state listed historic resources will be impacted by the Project.

Table of Contents

Tables

Exhibits

Appendices

1.0 Introduction

Midwater BESS, LLC (Midwater) contracted Westwood Professional Services, Inc. (Westwood) of Minnetonka, Minnesota, to perform a Phase I Archeological Survey for the proposed Midwater Energy Storage Project (Project) in Freeborn County, Minnesota. The proposed Project is an up to 150 MW Battery Energy Storage System (BESS) within Shell Rock Township. The Project Area encompasses 104.4 acres of privately owned, predominantly agricultural land. The final Project design is expected to occupy approximately 16 acres which constitutes the Area of Potential Effects (APE). The remaining 88.3 acres are not hosting Project facilities and are considered unused land for Project purposes. Midwater BESS LLC plans to construct the Project on a schedule with a commercial operation date by the fourth quarter of 2027.

The Project is located southeast of the Cities of Glenville and Albert Lea in Shell Rock Township, Freeborn County, Minnesota (**Exhibits 1** and **2; Appendix A**). The PLS locations of the Project are listed in **Table 1** below.

Table 1: Sections Containing Project Area and/or One-Mile Buffer

Township	Range	Sections Containing Project Area	Sections Containing One-Mile Buffer (Original Phase 1A Literature Review)
101N	20W	7, 8, 17	5–9, 16–21
101N	21W		1, 12, 13

The Minnesota State Historic Preservation Office (SHPO) requires that archaeological investigations be conducted by a qualified archaeologist who meets the Secretary of the Interior's qualifications as outlined in 36 C.F.R. 61. The Minnesota SHPO also outlines standards and guidelines for conducting work in the state. Rigden Glaab of Westwood meets the Secretary of Interior's Professional Standards for Archaeology, as stipulated in 36 C.F.R. Part 61, and served as Principal Investigator for the archaeological survey. Assisting in fieldwork were archaeologists William Christensen, Emory Worrell, Lindsay Schwartzkopf, and Ryan Steeves. Project task management and review was supported by Westwood Cultural Resources Manager Ryan Grohnke.

2.0 Scope of Work

A Phase I Archaeological Survey was conducted to determine whether any undocumented, significant archaeological resources are present within the proposed Project's APE and to define vertical and horizontal boundaries of identified sites. If new sites are identified, investigators assess proposed construction impacts and provide recommendations on avoidance or additional work. The APE for this Project is any location where ground disturbance could occur within the 16-acreAPE (**Exhibits 1** and **2**).

3.0 Survey Methods

Project survey methods included background research, a literature review, and field investigations in the form of pedestrian survey. Environmental background and historic contexts were used to assess site probability and determine site types most likely to be encountered in the area.

The background research and literature review involved detailed file review in the online Portal maintained by the OSA and an examination of site maps, archaeological site forms, burial files, and survey reports. Other sources investigated included the historic aerial photos and Andreas Maps. The background research and literature review identified previous cultural resource investigations and previously recorded archaeological sites, along with levels of disturbance and potential for sites within the Project area.

Fieldwork consisted of shovel testing within the APE in intervals of 15-meters on a grid overlay. Investigation of the Project APE was completed between June 6 and 11, 2024 with Rigden Glaab returning to complete field survey on June 25 and 26, 2024. Generally, shovel testing is utilized in areas where ground surface visibility (GSV) is less than 5%, however significant slopes, wetlands, and obviously heavily disturbed areas may be excluded from survey.

4.0 Results of Background Investigations

4.1 Environmental Background

The Project Area is located in a sparsely populated agricultural region in south-central Minnesota in Freeborn County, approximately 88 miles south of Minneapolis and St. Paul metropolitan area and immediately southeast of the City of Glenville on the east side of U.S. Highway 65 (**Exhibits 1** and **2**). Freeborn County's 722 square miles are primarily agricultural, with the Project Area being almost entirely land previously used for agriculture. The Project Area is predominantly in a disturbed field previously used for agriculture; grasses have colonized the surface limiting GSV to 5%.

4.1.1 Landscape

The Project Area is located in the Eastern Iowa and Minnesota Drift Plains of the Western Corn Belt Plains. The Western Corn Belt Plains is noted to possess high agricultural productivity due to its fertile mesic soils, temperate climate, and adequate precipitation during the growing season. The Eastern Iowa and Minnesota Drift Plains is geologically complex and is a transition between the bedrock-dominated landforms of the Rochester/Paleozoic Plateau Upland (52b) and the relatively recent glacial drift landforms of the Des Moines Lobe (47b). The region extends from Cedar Rapids, Iowa to the area north of Owatonna. The eastern half of the ecoregion is covered with pre-Wisconsin glacial till while the western half is till plain and till-covered moraines with outwash from the Des Moines Lobe (CEC 2011; WRCMSU 1991; White 2020).

The topography is gently undulating to level and formerly was vegetated with tallgrass prairie in the western and eastern parts of the ecoregion and oak savanna in the central part. Soils are a complex pattern of forest soils (Aqualfs and Udalfs) in the central part of the ecoregion where oak savanna was more dominant, and prairie soils (Aquolls and Udolls) to the east and west, where prairie was more dominant. The topography is rolling on the higher elevation ridges, to dissected along drainage courses, to flat in the Mississippi River floodplain and in outwash areas on top of the bluffs back from the edge of the floodplain. The former vegetation was tallgrass prairie and the soils are predominantly sandy and loamy well-drained Udolls. Current land use is corn and soybeans with scattered peas, and some pasture and hay. South of Interstate 94 and east of

Highway 95, much of the bluffs above the dissected stream corridors leading to the St. Croix River are covered with forest (CEC 2011; WRCMSU 1991).

4.1.2 Flora

Prior to European settlement in the region, grasses would have dominated a Prairie Grassland Biome. Frequent fires would have kept woody vegetation in check, with fire-tolerant trees, such as cottonwoods (*Populus spp)*, elms (*Ulmus spp*), ashes (*Fraxinus spp*), and willows (*Salix spp*). The modern landscape does not reflect that of pre-European peoples, as less than one percent of this prairie landscape remains, making it functionally extinct. Modern trees are planted as windbreaks around farmsteads and along fencerows to prevent soil erosion, with a mixture of native and non-native plants. Modern native plants may include, big bluestem (*Andropogon gerardii*), blazing star (*Liatris spicata*), purple prairie clover (*Dalea purpurea*), prairie dropseed (*Sporobolus heterolepis*), leadplant (*Amorpha canescens*; Wiken et al. 2011).

4.1.3 Fauna

The agricultural landscape of the Western Corn Belt limits the wildlife that may reside within the region. Modern native mammals may include white-tailed deer (*Odocoileus virginianus*), pocket gopher (family Geomyidae), American badger (*Taxidea taxus)*, raccoon (*Procyon lotor*), coyote (*Canis latrans*), and Virginia opossum *(Didelphis virginiana*). Birds may include Canada goose (*Branta canadensis*), red-tailed hawk (*Buteo jamaicensis*), barn owl (*Tyto alba*), wild turkey (*Meleagris gallopavo*), greater prairie chicken (*Tympanuchus cupido)*, and upland sandpiper *(Bartramia longicauda*). Reptiles and amphibians may include great plains toad (*Anaxyrus cognatus)*, American toad (*Anaxyrus americanus*), and snapping turtle (*Chelydra serpentina*). Waterways are predominantly channelized intermittent and perennial streams. Streams and some natural lakes provide habitat for a variety of species like walleye (*Sander vitreus*), bluegill (*Lepomis macrochirus*), northern pike (*Esox lucius*), sunfish (family *Centrachidae*), and others (MnDNR 2021; Wiken et al. 2011).

4.1.4 Soils

Soils in the Project Area are comprised primarily of Dickinson fine sandy loams, Estherville sandy loams, and Dakota loams. A-horizons tend to extend to around 20 to 30 cm below the surface (cmbs), and primarily consist of fine sandy loams. These are typically followed by Bw-horizons extending to depths of 65 to 70 cmbs. These soils are typically located on outwash plains, tend to be well drained soils formed in glacial or alluvial deposits that have been reworked by wind, with minimal slopes of 2 to 12%. These soils are ideal for agricultural use (USDA 2024).

4.1.5 Geology

Late Cambrian to Middle Devonian sedimentary rock consisting of sandstone, shale, and carbonates make up the sequence of bedrock that underlies Freeborn County. The bedrock was deposited under tectonically stable geologic conditions in shallow marine waters that flooded southern Minnesota 500 million years ago. Limestone forms the bedrock surface beneath the glacial drift, representing the youngest bedrock units that are underlain by progressively older shales and sandstones (WRCMSU 1991).

Knife River flint (KRF) is also present in the region and was utilized by indigenous peoples. Its source is likely attributed to glacial cobbles or gravels. The Pipestone Quarry Site (21PP2) located 185 miles west-northwest of the Project was visited by the artist George Catlin in 1836. The pipestone quarries in southwestern Minnesota were extensively mined by indigenous tribes for pipe manufacture. The raw material, catlinite, was eventually named after Catlin (Morrow 2016: 34).

4.1.6 Geomorphology

Geomorphology of the Project Area is primarily comprised of a thick loess and glacial till cover over the Mesozoic and Paleozoic shale, sandstone, and limestone (Wiken et al. 2011). The greater ecoregion is bisected by the Minnesota River, from northwest to southeast, and its floodplain that is trenched into the glacial till along much of its length before the river turns northeast at Mankato. Much of the eastern border is formed by moraines from both the Des Moines Lobe glaciation and earlier stages of glaciation. The largest part of the ecoregion is in till plain and ground moraine. Glacial drift is composed mainly of glacial till, which is a matrix of sand, silt, and clay with scattered pebbles, cobbles, and some boulders. The drift deposits overlie the bedrock surface, ranging from 50 to 200 feet. The Des Moines Lobe formed during the Late Wisconsian glacial period and moved across the entirety of the state. The lobe crossed the drainage divide near Mankato, eventually flowing in the Des Moine River Valley around 16,000 years ago. The recession of the Des Moines Lobe exposed Freeborn County at least partially by 17,000 calibrated years before the present (cal yr B.P.), and fully by 13,2000 cal yr B.P. The sediment left behind is referred to as New Ulm glacial till. Prior to glaciation, erosion of the bedrock surface produced valleys on the bedrock surface, all of which are now filled with glacial drift. The nature of thickening and thinning of glacial deposits is largely influenced by buried bedrock valley cuts. Freeborn County is located within, the Shell Rock River Watershed which is located in central and south Freeborn County, heading further south into Iowa. Albert Lea Lake, Fountain Lake, Goose Lake, and Twin Lakes make up the largest lakes within the watershed. The project sits atop the bank of the Shell Rock River. (Buhta et al. 2022; Grimm 1985; Gronhovd et al. 2013; Wiken et al. 2011; WRCMSU 1991).

4.2 Cultural History

4.2.1 Prehistoric

In general, there are five major archaeological traditions in Minnesota that consist of the Paleoindian, Archaic, Woodland, Plains Village, and the later Mississippian, Oneota, and Psinomani periods (Anfinson 1997; Arzigian 2008; Dobbs 1990; Gibbon 2012). These traditions represent varying degrees of cultural adaptations to changing environmental conditions, endemic population growth, and the movement of Native American groups in the past. The following cultural context presents an interpretation of this history based on current archaeological research and broadly accepted models for precontact social lifeways.

The Project Area is situated in Minnesota Archaeological Region 2e (Prairie Lake [East]; Gibbon et al. 2002). Gibbon notes that village sites of earlier prehistoric periods are typically located on islands, lake peninsulas, and major rivers. Archaeological sites can be expected during the early periods to be near glacial streams and rivers. In this context, winter villages occur in wooded areas of large river valleys, while temporary campsites are identified along minor rivers and lakes. Woodland period camps follow a similar pattern across the landscape but are limited to temporary or special use activities. Euro-American settlements start along riverine areas and later expand to follow surveyed divisions in subsequent townships.

The cultural history presented below focuses on the archaeology of the Oak Savanna (222ME) specifically the interior of southeastern Minnesota. This encompasses Freeborn County, in the Prairie Lakes Region (PLR) where the Project is located. Freeborn County marks the most southeastern county within the PLR. Archaeological phases will be discussed as they pertain to research on cultural changes influenced by environmental and social variables. Ceramic, lithic, and groundstone technologies are also included as material markers of these transitions.

4.2.1.1 Paleoindian Period (13,000 to 9,000 Before Present [B.P.])

The Paleoindian Period represents the earliest evidence of human occupation in Minnesota, typically separated into the Early Paleoindian (13,000–12,500 B.P.) and Late Paleoindian (12,500–9,000 B.P.) periods (Frison 1998). Spear technology is important during this timeframe, as opposed to an emphasis on atlatl and bow and arrow lithic technology seen during later periods. This reflects a subsistence strategy focused on large game hunting and high mobility. However, Gibbon (2012: 37) suggests foraging behavior may have been broader spectrum, as evidenced by the long temporal overlap of eastern Archaic and Paleoindian traditions in Minnesota. Paleoindian settlement and mobility patterns constitute a major discussion point in archaeological research.

Paleoindian archaeology in Minnesota mirrors the initial expansion of *Homo sapiens sapiens* during the height of the Eurasian Upper Paleolithic periods into North America (Gilligan 2010: 16). The focal point of this migration is hypothesized to have occurred in a region termed Beringia, which extends from the Verkhoyansk Mountains in Siberian Russia to the edge of the now extinct Laurentide glacial ice sheet in western Canada (Hoffecker and Elias 2007). Traditionally, the shallow waters of the Bering Sea are argued to have served as the principal access point into the Americas when sea levels were reduced due to extensive glaciation that occurred during the Pleistocene Epoch (2.588 million to 12,000 B.P.).

The proposition that the Bering land bridge may have served as passageway for early human migrations was first suggested by the Spanish missionary Fray Jose de Acosta in A.D. 1590 (Hoffecker and Elias 2007: 2). Although Spain had not yet explored these waters, de Acosta thought it was the only logical explanation for how indigenous populations would have come to the Americas. Eric Hultén (1937) later coined the term “Beringia” to describe the Quaternary ecology of this unique region. The designation Beringia is named for the famous Danish explorer Vitus Bering, who, by way of Russian contract, was the first European to sail the strait in 1728.

The area associated with the bridge is termed the Bering-Chukchi Platform, which extends 1,600 km from the Arctic Ocean to the eastern Aleutians (Hoffecker and Elias 2007: 5). Although much of this region is flat, the topography is punctuated by a few small islands, such as St. Lawrence Island and Wrangle Island. Most of the shelf lies beneath less than 100 meters of water and drops to 30 meters near the Chukotka Peninsula, Russia. Over the 2.6-million-year course of the Quaternary Period, 100 Marine Isotope Stages (MIS [Oxygen 16/18 ratios]) have been documented, which show the repeated exposure and inundation of the land bridge constituting 50 glacial/interglacial oscillations (Hoffecker and Elias 2007: 7–8). Initial human migrations into North America appear to be associated with the cold-snap brought on by the Younger Dryas (12,900–11,700 B.P.), which effectively lowered sea-levels by 50 meters, exposing the platform.

The archaeological record for humans expanding into North America is manifested at both interior and coastal sites. Wygal et al. (2022) recently reported on osseous technology dating to 13,600 to 13,300 cal yr B.P. from the Holzman Site along Shaw Creek in interior Alaska. These mammoth ivory rods are the oldest confirmed bone tools in the Americas. Early interior sites include that of Swan Point, Broken Mammoth, and Healy Lake, Alaska, which suggest population movements between the Laurentide and Cordilleran ice sheets between 13,000 to 11,000 B.P. (Cook 1996; Holmes 2001; Yesner 2001). Concurrently, a rapid coastal migration is also indicated at several South American localities, such as Monte Verde, which demonstrate potential evidence for groups moving by boat down the Pacific shoreline at approximately 15,000 B.P. (Dillehay 1989; Dixon 1999; Fladmark 1979).

Genetic work with mtDNA haplogroups in the Americas and Asia appears to confirm the archaeological evidence, showing simultaneous coastal/interior population movement occurring between 18,700 and 14,200 B.P. (O'Rourke 2009; Perego et al. 2009). Alternatively, although followed by much criticism, Bradley and Stanford (2004) suggest that the progenitors of Clovis, and perhaps other groups, were the product of Atlantic migrations associated with peoples of the Solutrean cultures in France. Current genetic evidence refutes this claim; however, the issue does highlight an important debate in Alaskan archaeology (O'Rourke 2009; Perego et al. 2009).

The Pleistocene history of Minnesota is long and complex with most of the state and surrounding regions being covered in glaciers between 18,000 and 11,000 B.P. (Manz 2019: 23). Glaciers did not fully recede until approximately 10,000 years ago, where only the southwestern and southeastern parts of the state remained unglaciated. A dominant feature following deglaciation was Glacial Lake Agassiz. This overlapped the northwest portion of the state and formed during the retreat of the Des Moines Lobe, which principally drained to the south via Glacial River Warren (Gibbon 2012: 38). As Lake Agassiz further retreated north, the modern Red River of the North began to form flowing towards the Hudson Bay. In terms of human occupation potential, the southern part of the state is likely the highest probability area to encounter archaeological sites, as it was unglaciated (Gibbon 2012: Map 2.1). Elk, mammoth, and extinct forms of bison (e.g., *Bison antiquus*) may have been hunted by Pleistocene Native Americans of this time frame in Minnesota; however, other resources were probably equally important.

Waguespack (2007: 69–70) highlights evidence for early migrations into North America that indicate hunter and gatherers may have been generalized foragers, as opposed to explicitly large game predators. Historically, the first evidence for the Paleoindian Period comes from New Mexico where archaeologists uncovered fluted projectile points in association with extinct megafauna at sites, such as Blackwater Draw (Cook 1927; Figgins 1927). These important early finds quickly placed the antiquity of humans on the mid-continent of North America at the end of the Late Pleistocene (Howard 1936). Much of the debate generated by these discoveries overly focused on the role mega-fauna placed in the subsistence economy of Paleoindian hunter and gatherers. This pattern is different than many of the interior localities dating prior to 11,000 B.P. (e.g., the Village Lake Site at Healy Lake in Alaska [Cook 1969]), which exhibit a broad-spectrum diet. Bison and wapiti appear to be the predominant large game that were hunted during this early period; however, birds and other small mammals were also exploited (Yesner 2001).

Analogous patterns have been observed outside of Minnesota, including eastern Great Basin sites, such as Bonneville Estates Rock Shelter, which demonstrate a broad-spectrum diet occurring between 13,100 and 12,000 B.P. (Goebel 2007; Graf and Schmitt 2007: 103). The archaeological record from this site suggests the prehistoric inhabitants were participating in a mixed foraging and hunting strategy. The identification of this trend in the Great Basin has led to the suggestion that this early phase be called the "Paleoarchaic" instead of "Paleoindian" in recognition of the markedly different subsistence strategies that were similar to later archaic groups (Graf and

Schmitt 2007; Willig 1988; Willig and Aikens 1988). Realistically, the debate about whether early Paleoindians were generalized foragers or large game specialists likely rests “on the relationship between what could have been hunted and what was actually taken” (Waguespack 2007: 70; Waguespack and Surovell 2003).

In contrast to these views, Kelly and Todd (1988) take the position that early populations of hunter and gatherers entering into the North American continent were heavily dependent on terrestrial fauna, as opposed to plant resources, since this was a more reliable food source. They argue that the strategies employed by these foragers were starkly different than that of modern hunter and gatherers, in that groups were not operating in seasonally restricted spaces. An optimal foraging analysis for procuring large game has been conducted by Byers and Ugan (2005). Specifically, they identified variables that may have deterred Paleoindians from focusing exclusively on megafauna, including the large number of individuals needed for processing, difficulty in procuring game, and distribution of game within different environmental patches. The authors conclude that the phenomena of exclusive large mammal hunting likely only occurred in a “narrow range” of places where game was abundant and processing time was low, such as in the Great Plains (Byers and Ugan 2005: 1625). Minnesota and surrounding areas may have encompassed by this narrower range, as suggested by Kelly and Todd (1988).

Continuing with the issue of broad spectrum versus predominant large game hunting has been problematic to the debate of humans entering into the North American continent. Guthrie (1990) has supported the notion that humans could have easily followed the wide trails of proboscideans across the land bridge. Haynes (2001) reasons that modern African elephants can serve as an analogy for understanding how Pleistocene hunters may have interpreted herd characteristics. Such behavioral patterns include 1) the speed, direction, and health of an elephant herd based on the distribution/content of dung, and 2) the relative size of the animals based on the track width. Elephants create a series of fixed and habitually used trails that would have allowed initial colonizers into interior Alaska as a means to systematically explore the landscape. Conversely, Yesner (2001: 317) sees the process of colonization into interior Alaska as involving a "push-pull" factor, presenting evidence for the existence of proboscideans in Siberia up to 9000 B.P. This suggests that hunters would have been encouraged to remain in western Beringia for a longer period of time to procure this higher ranked resource. Foragers may have only episodically crossed the land bridge as eastward movement began to develop as the principal subsistence cycle.

A theoretical trajectory of incipient occupation into novel landscapes has been proposed by Beaton (1993) to describe the initial colonization of Australia (also see Yesner 2001). His model breaks down human entry into two categories: transient explorers and estate settlers. Beaton suggests that the settlement pattern associated with transient explorers would be lineal, conforming principally to significant geographic features, such as mountains, rivers, etc. This type of occupation may be associated with the earliest sites in Minnesota, which could be situated along the margins of major river corridors (e.g., Glacial River Warren). High mobility and small populations are necessary with the transient model, since groups are entering into an unfamiliar landscape leading to potentially high extinction rates. In contrast, estate settlers inhabit new lands in a more radial fashion since there is a greater degree of familiarity with the resources present. Kelly and Todd (1988) argue that immigrant Paleoindians would have needed to switch territories frequently due to unfamiliar landscapes. This would have been an adaptive method to adjust to resource stress by either switching territories or adjusting the types of foods being consumed. In reality, the Early and Late Paleoindian periods in Minnesota likely represented a combination of these alternating mobility strategies.

4.2.1.2 Minnesota's Early Archaeological Record

Clovis culture is commonly regarded as the first evidence of human occupation in Minnesota during the Early Paleoindian period. Its signature implement, the Clovis projectile point, is made from high quality lithic materials and has a central channel flake that extends part way up the proximal shaft of the tool (Frison 1998). Folsom is another Early Paleoindian technology that temporally follows Clovis during the Early Paleoindian Period. The Folsom point and type site are named after the city of Folsom, New Mexico, where a Folsom projectile point was recovered with the ribcage of the now extinct species of bison, *Bison antiquus* (Dobbs 1990). Its projectile point is typically made from high quality materials as well, with the central channel flake extending the entire length of the implement to the distal tip (Hofman 1995).

Clovis and Folsom projectile points were used to hunt now-extinct forms of game, including *Bison antiquus* and mammoths. Evidence for Early Paleoindian occupation in Minnesota is limited to isolated finds of projectile points. Clovis isolated finds (N=30) have been found in central and southeastern Minnesota, while Folsom isolated finds (N=20) are documented in the western and southern parts of the state (OSA 2024).

Anfinson (1997: 34) suggests the reason southwest Minnesota has produced limited Clovis evidence could be attributed to Pleistocene reactivation episodes of Glacial River Warren in the Minnesota River trench. Riverine site encampments were favored among early foragers, but these locations are quickly destroyed during flooding or other channelization events. The archaeological record has simply not survived for this period or is buried beyond conventional excavation methods.

Morrow (2016: 125 [Fig. 5.9]) identifies that Clovis technology is present in Murray County (approximately 125 miles northwest of the Project) albeit in the form of isolated projectile points. An example from the Harris Darling Collection presents a heavily curated Clovis point made from an unidentified chert or chalcedony. The material, to this reader, appears slightly oxidized, which may be from heat treatment or naturally occurring fire. The morphology of Clovis projectile points in Minnesota may represent a lithic adaptation from similar types in Wisconsin (e.g., Gainey). Two additional Clovis points of Cedar Valley Chert are shown from the Gregg Nelson Collection, in Blue Earth County. The Rummells-Maske and Carlisle Clovis Cache Sites in central and eastern Iowa represent two Clovis locations found to the south of the Project (Hill et al. 2014).

Morrow (2016: 129 [Fig. 5.11]) shows examples of Folsom technology from Pine City, Minnesota and Freeborn County to the north and west of the Project respectively. These consists of isolated projectile points that are made from an unidentified gray chert material (MBISP Artifact #12428 and Artifact #07201). Each point demonstrates Folsom patterns, such as the central flake, along with other characteristics including possible heat treatment to the barbs of MBISP Artifact #07201. Additionally, Marrow (2016: 131 [Fig. 5.12)] notes a Midland point of unidentified chert (MHS Artifact 172.2.1.1) was recovered to the east of the Project in Fillmore County, which is believed to be of the same time period as Folsom, but unique from Folsom in manufacture.

The Late Paleoindian Period in Minnesota is characterized by an unfluted variety of projectile points similar to earlier lanceolate forms associated with the Plano Cluster (Dobbs 1990). Alberta, Agate Basin, Eden, Hell Gap, and Scottsbluff are varieties of projectile points found during this time, which are often associated with bison kill sites. Late Paleoindian sites are significantly more common in Minnesota, with over 200 being recorded. Browns Valley Site in western Minnesota and the Bradbury Brook Site in east-central Minnesota are important Late Paleoindian localities in the state (Morrow 2016; OSA 2019).

The discussion will focus on the Browns Valley Site (21TR5) which is known for the quality of Late Paleoindian data. The site is located next to the town of Browns Valley, Minnesota in the northwest of the Project in Traverse County. Browns Valley contains a possible Late Paleoindian burial dating to approximately 9000 B.P. (Morrow 2016: 125). Anfinson (1997: 32) previously discusses two radiocarbon assays from bone samples (9160 +-110 B.P. and 9049 +-82 B.P.) that demonstrate its antiquity as one of the oldest burials in North America. The site also contains a significant Plains Village component with circular fortifications. (See Plains Village discussion below.)

The grave consists of a male aged 35 to 39 in a U-shaped, red-ochre stained depression that was found with a possible lithic cache of six projectile points (Anfinson 1997: 30–32; Gibbon 2012: 56; Morrow 2016: 157). Commonly called Browns Valley projectile points, this implement is lanceolate-shaped with convex margins and a ground concave base that can include basal thinning flakes onto the medial-proximal biface surface. The points found at the type site were made from KRF whose primary source area is western North Dakota. Smaller KRF cobbles can be found in regional glacial lag, often reduced by bipolar methods.

Browns Valley points are a unique Late Paleoindian tool type found in southern Minnesota. The distribution of these points broadly follows the western Mississippi River Valley from Minnesota to Mississippi (Morrow 2016: 157). Browns Valley points have been found in Murray County surface collections, and other examples are present, though limited, from Aitkin and Pine counties in east-central Minnesota. The type site itself in Traverse County contains the most biface examples from a single collection (N=6).

Dalton Tradition (10,500–9,500 B.P.) implements are more common to the Central Mississippi Valley and represent a transitional lithic type (e.g., Dalton, Hi-Lo, and Quad points) from other Late Paleoindian tool forms (Buhta et al. 2017: 77; Morrow 2016: 140). Dalton projectile points are a medium-to-large sized spear or dart that has a lanceolate/auriculate body, sometimes serrated, and often is proximally ground along its concave base. Many examples show evidence for beveling or resharpening on the margins of the projectile point. Flake tools, end scrapers, side scrapers, and gravers comprise implements found in Dalton assemblages.

Southern Dalton assemblages contain unique tools that include stone drills/awls, adzes, shaft abraders, and edge-abraded cobbles (CALS 2020). The proliferation of adzes in the archaeological record show that woodworking became an important activity (e.g., canoe production, structures). Cemeteries also start to occur as can be seen south of the Project at the Sloan Site in Green County, Arkansas (Morrow 2020). Approximately 28 to 30 people were buried with some including large ceremonial items called "Sloan Bifaces," which mirror the form of Dalton points (Morse 1997). Overall, these trends in site patterning signal an increase in social complexity.

Expanding diet breadth in Dalton assemblages suggests that deer, waterfowl, fish, turkey, nuts, berries, and other small mammals (rabbits, squirrels, and raccoon) were likely targeted. Morrow (2016: 140) notes that from "one to six points have been found in Aitkin, Anoka, Brown, Clearwater, Freeborn, Fillmore, Goodhue, Hennepin, Houston, Itasca, Koochiching, Lac qui Parle, Meeker, Morrison, Ramsey, Rice, Roseau, and Wabasha counties" in Minnesota. The Dalton Tradition is principally defined from excavations at The Twin Dalton Sites (23SL591 and

23SL766), Big Eddy Site (23CE426), and Graham Cave (23MT2) in Missouri (Chandler 2001; Martens 2010). Dalton points in Minnesota are often made from Burlington Chert, a material sourced farther south.

4.2.1.3 Archaic Period (9000 to 3000–2500 B.P.)

Approximately 9000 B.P., a new mode of subsistence strategy began to emerge in the archaeological record across North America (Emerson et al. 2011). The general pattern of this change is the replacement of lanceolate spear-points used during the Paleoindian period, and the adoption of atlatl technology with the presence of groundstone implements. Dalton lithic technologies may represent a technological transition (Buhta et al. 2017: 77). This represents a fundamental difference from earlier forager behavior with a diversification of economy that incorporated more plants into the diets of Native Americans. The Archaic Period in Minnesota began substantially later than other regions starting around 9000 B.P., principally in the southeastern part of the state (Anfinson 1997; Gibbon 2012). Important Archaic innovations include the use of grooved mauls and axes, canine domestication, copper tools, and incipient horticulture. The Archaic Period in Minnesota is poorly known; however, it comprises its longest temporal frame of human occupation.

Xeric environmental conditions began around 9000 B.P. with the spread of prairie grassland across most of southern Minnesota (Anfinson 1997). Many of the lakes created as a product of Pleistocene glaciation started to dry during this time, leading to a reduction in game (e.g., bison, fish, birds, etc.) dependent on these resources. These environmental transformations promoted a diversification in hunting strategies, which differed dramatically from the Paleoindian period.

Minnesota experienced a wide variety in changing environmental conditions based on its different ecotones across the state during this time. Consequently, the traditional models of Early, Middle, and Late Archaic found elsewhere in North American do not directly apply. These different environmental regimes necessitated a variety of adaptive strategies to successfully subsist. Archaeologists have defined these internal periods within the state as follows: Lake Forest Archaic, Shield Archaic, and Riverine Archaic, and Prairie Archaic (OSA 2022).

The temporal period known as the Lake Forest Archaic accompanies archaeological sites from about 7950 B.P. in much of central and northern Minnesota (Anfinson 1997; Gibbon 2012). Prior to this period, most sites in this region would have mirrored those found in grasslands, whose economy focused on bison hunting. As a result, the Prairie Archaic pattern would have been prevalent during the earliest periods based on the similar environment. The expansion of woodlands during the mesic environments of the post-glacial thermal maximum led to a greater diversification of both plant and animal species. The Mississippi River corridor also served as a conduit for archaic groups from other regions, which ultimately influenced the potential spread of technologies and new lifeways into Minnesota. The site of Petaga Point in Kathio State Park is one of the best examples of the Lake Forest Archaic Period and contains evidence of Old Copper culture. This is approximately 200 miles north of the Project.

The Shield Archaic Period characterizes sites from far northeastern Minnesota, whose assemblages are the product of Native American adaptations found farther north in Canada (i.e., Canadian Shield). An important characteristic of Shield Archaic sites is the lack of groundstone tools and copper artifacts found. often associated with archaic groups elsewhere in Minnesota (Anfinson 1997; Gibbon 2012). Shield Archaic sites in Canada are typically found near lakes and rivers where caribou and other migratory game may have crossed. Similar to other northern adapted populations, these groups may have utilized specialized technologies, such canoes, snowshoes, toboggans, bark and skin-covered shelters, bark containers, and efficient winter clothing. The Fowl Lake Site is an important Minnesota site near the Canadian border that exemplifies the archaeological record of this period.

The Riverine Archaic period is found at sites located along the lower Mississippi River and other drainages in southeastern Minnesota (Anfinson 1997; Gibbon 2012). The river valley bottomlands provided a rich and varied source of animals and plants that were exploited by Native American populations. Common riverine resources included aquatic tubers, fish, waterfowl, mussels, deer, elk, and bison may have been taken in the uplands. The fertile floodplains also provided suitable locations for horticulture where plants, such as squash and various early cultigens, were grown. The King Coulee Site in Wabasha County is one of the most complete archaic sites from this region and dates to between 3450 to 2450 B.P. A slate gorget, mussel shells, squash seeds, and stemmed projectile points were recovered during the excavations (OSA 2019). Wabasha County is approximately 78 miles northeast of the Project.

4.2.1.4 Prairie Archaic

The Prairie Archaic Period is found across the western and southern parts of Minnesota, representing an adaption to grassland environments. Key game hunted were bison; however, subsistence strategies became diversified resulting in a range of new technologies to process plant and hunt/trap varied animals. An important locality defining this time is the Itasca Bison Site (21CE1) in Clearwater County, Minnesota. The site dates between 8520 and 7790 B.P. and was possibly occupied over two separate stages (Widga 2014). Itasca yielded the remains of bison (N=16), but also contained another pattern for expanding diet breadth in separate species counts of mammals (N=17), birds (N=9), fish (N=7), and turtle (Buhta et al. 2017: 19). These counts have recently been questioned in terms of the degree of faunal diversity, currently suggesting a more limited number (cf. Widga 2014). The most common artifact forms were side-notched projectile points, knives, scrapers, choppers, grinding stones, hammerstones, and perforators. Other important localities from the Prairie Archaic Period include the Granite Falls Site, the Cherokee Sewer Site, and Canning Site. A later regional variation of the Prairie Archaic are the presence of copper tools in the northwestern part of the state, but few examples are in the southwestern areas (Anfinson 1997).

Buhta et al. (2017: 18) identify 32 Archaic sites in Minnesota's Archaeological Region 1 and in Region 2E (Prairie Lake [East]; see Gibbon et al. 2002). Buhta et al. (2017: Figure 7) present a map with the plotted location of approximately five Archaic sites in Freeborn County. The majority of the Archaic data specific to Freeborn County is mainly limited to isolated projectile points, so any inference must be drawn from regional examples.

This period represents a climax in pedestrian bison hunting across the PLR. Numerous variations of side-notched projectile technology exist in the Early Archaic including forms such as Graham Cave, Simonsen, Raddatz, Godar, Reigh, Osceola, Matanzas, and Oxbow forms. Morrow (2016: 121) notes that many points from the Archaic have variations similar to "two or three different types." The fundamental characteristic—side notching—is understood here to represent a broad lithic adaptation encompassing many Native American groups practicing similar subsistence strategies. From a global perspective, the human capacity for variation in projectile point style as an ethnic marker is one not just contained in flaking or metal work, but also in its associated accoutrement.

For example, Wiessner (1983) documented a broad range of projectile point characteristics among the !Kung, G/wi, !Xo, and Nharo of the Kalahari San in Botswana, Africa. Projectiles points for these foragers are unifying cultural symbols expressing individualism, language groups, poison delivery methods, folklore (eland mythology), and were exchange items connecting larger populations. In Minnesota, projectile point morphology should be cautiously used to identify specific cultural groups during a period with significant population movement and an unknown ethnographic context.

The Jeffers Petroglyph Site (21CO3) located 95 miles northwest of the Project contains various images of atlatls and projectile points pecked into an expansive red quartzite ridge in Cottonwood County (Buhta et al. 2017: 34). Images of atlatls, stemmed points, and tanged points indicate that some of the representations could be from the Archaic period (Anfinson 1997: 44). Lothson (1976) suggests the petroglyphs are associated with the practice of hunting magic, performance of sacred ceremonies, and documenting important events. Over 5,000 individual glyphs have been documented at Jeffers, which Lothson subdivided into five major classes including human, tool/weapon, Thunderbird, animal, and geometric forms. There is an absence of images depicting contact-period items, such as horses or guns, suggesting all of the petroglyphs pre-date A.D. 1750.

A key regional example of the Archaic transition close to southern Minnesota can be found 130 miles southwest of the Project near Cherokee, Iowa, along the Little Sioux River. Horizon II of the Cherokee Sewer Site (13CK405) contains a bison bone bed layer with an estimated 15 to 30 individuals suggesting a late winter kill site (Anfinson 1997: 38; Gibbon 2012: 75). The assemblage is also important for the diversity of other animal remains present including skunk and rabbit. Lithic artifacts were predominantly made from Tongue River silica consisting of projectile points, end scrapers, choppers, and burins. Bone tools were identified. This type site highlights the diversification of subsistence strategies being practiced during the Early Archaic (Anderson 1978).

The Granite Falls Bison Site (21YM47) is located approximately 150 miles northwest of the Project in Yellow Medicine County. It is a well-dated Early Archaic bison processing encampment (6390+-110 and 6840+-120 B.P.) with immature specimens suggesting late fall or early winter site occupation (Anfinson 1997: 36). Tongue River silica is an important lithic material with artifacts including debitage, side-notched projectile points, and a large ovate biface. This site signals hunting complexity where it is hypothesized bison (*Bison occidentalis*) were driven into bedrock basins and trapped against the bedrock walls before being dispatched. Granite Falls Bison Site demonstrates some of the earliest regional evidence for emerging foraging economies in the Archaic.

A similar assemblage has been excavated at the Goodrich Site (21FA36) in Faribault County, approximately 35 miles west of the Project (Anfinson 1997: 36–37). Artifacts consisted of stone axes, mauls, scrapers, and bison bone indicative of a seasonal kill site. Parallels have been noted between these artifacts and those excavated at the Cherokee Sewer Site. There is evidence for mortuary practices during the Prairie Archaic near the PLR. The Turin Site (31MN2) is located in western Iowa 175 miles southwest of the Project. This inhumation was identified in a gravel pit with four individuals buried flexed position including one covered in red ochre. Grave goods were comprised of an *Anculusa* shell bead necklace and side-notched projectile points (Anfinson 1997: 39).

4.2.1.5 Woodland Tradition (3000 B.P. to 950 B.P.)

Substantial cultural changes began to occur in southwestern Minnesota approximately 3000 to 2500 B.P., with Native American adaptations mirroring broader trends across the southern and eastern United States (Arzigian 2008). This timeframe, known as the Woodland Period, is marked by the presence of burial mounds, pottery, bow and arrow technology (ca. 1450 B.P.), and intensive plant cultivation. Archaeological settlement patterns show Native American groups beginning to aggregate into larger populations along lakes, rivers, and associated drainages. Woodland archaeological sites are often broken into one of a classic tripartite temporal division of Early (3000–2150 B.P.), Middle (2150–1450 B.P.), and Late Woodland (1450–950 B.P.) periods (Emerson et al. 2008).

Traditionally, variations in the Woodland Period across time and space are argued to derive from broader influences that shaped significant trends in cultural practices. These interaction spheres include the Adena (Early Woodland Period), Hopewell (Middle Woodland Period), and Mississippian (Late Woodland Period) cultures (Anfinson 1997; Gibbon 2012). While these divisions work well for other regions of North America, they do not neatly apply to archaeological sites in southwestern Minnesota (Arzigian 2008).

Major Woodland complexes in the various regions of the state include Laurel, Brainerd, and Blackduck (northern Minnesota); Malmo, St. Croix, Onamia, and Kathio (central Minnesota); Fox Lake and Lake Benton (southwestern Minnesota); and La Moille, Howard Lake, Sorg, and Effigy Mound (southeastern Minnesota; Arzigian 2008). Pottery is an important distinguishing characteristic of these complexes, which are commonly named for the associated type site where they were first discovered. Ceramic vessels range in form from globular to conoidal with shell or sand grit as temper, and designs across the body (e.g., net impressions, patterned incisions). Lithics during this timeframe shows a preference for smaller projectile points utilized principally in bow and arrow technology.

A hallmark characteristic of the Woodland Period in Minnesota is presence of burial mounds, of which 12,000 have been recorded in the state (OSA 2019). The areas surrounding Red Wing, Lake Minnetonka, and Mille Lacs Lake have the highest concentrations of burial mounds. Many of these structures have been destroyed due to historic and modern development. Nearest the Project, the area around Albert Lea Lake demonstrates the highest concentration of mound building activity in Freeborn County.

The subsistence strategies of Woodland groups in Minnesota varied widely based on the type of resources available. Wild rice was central to groups living in the northeast quarter of the state, which was husked in excavated pits and parched in ceramic vessels (Arzigian 2008). Other resources hunted or gathered included deer, fish, and various plants, such as maple sap for sugar. Farther west, around the Red River Valley and southern Minnesota, bison continued to be important as they were in the Archaic Period (OSA 2019). The “Three Sisters” of squash, beans, and corn were grown in small garden plots, which were further supplemented with other resources (e.g., fish and aquatic mammals).

4.2.1.6 Archaic Transition and Woodland Period

In the Project Area, the environment became cooler and moister around 4,000 to 5,000 years ago leading to an expansion of woody vegetation and the movement of bison herds farther west (Buhta et al. 2017: 14). Referred to as the Mountain Lake Phase (5000–2200 B.P.), this long period of time represents the terminus overlap of the Archaic and subsequent Woodland. Subsistence strategies formed a "lake-oriented habitation pattern" where archaeological sites are found commonly on lacustrine islands and peninsulas (Anfinson 1990; Anfinson 1997: 42–47). Foragers procured a blend of upland and aquatic resources but were more tethered to the landscape than previous periods. Lanceolate projectile points exist during this time frame with some similarities to Plano stemmed varieties. These are often of poorer quality in production made from local materials. There is little evidence of horticulture tools (e.g., groundstone) or ceramic use across the PLR during the Mountain Lake Phase. Some copper technology becomes evident, often restricted farther east.

The Mountain Lake Site (21CO1) is a type locality for this period located approximately 80 miles northwest of the Project in Cottonwood County, Minnesota (Anfinson 1997: 42–47). Located on an island in Mountain Lake, this site produced bison, muskrat, small mammals, fish, turtle, and waterfowl remains suggesting a diverse diet breadth (Anfinson 1997: 45). Other Mountain Lake Phase sites include Pedersen (21LN2), Fox Lake (21MR2), Big Slough (21MU1), and Arthur (13DK27). The Hilde Site (39LK7) in the PLR of South Dakota has seven to 10 graves that consisted of 17 to 18 individuals in primary and secondary burials dating to the Mountain Lake Phase.

The first appearance of ceramics in southwestern Minnesota coincides with the Fox Lake Phase (2220–1250 B.P.), which continues with the trend of occupation occurring on or near lakes (Arzigian 2008: 63). Arzigian (2008: 63) identified 52 Fox Lake sites in the PLR as a general density estimate for the region. There is an absence of mounds in the PLR of the Fox Lake Phase, while mounds are common elsewhere throughout Minnesota. Conoidal and semi-conoidal ceramics with grit and shell temper were excavated at the Fox Lake Site (21MR2) near Sherburn, Minnesota, located approximately 70 miles west of the Project, along with a possible fire pit, scrapers, knives, projectile points, mano and two celts (Anfinson 1997: 47). Ceramics from this phase resemble other Early Woodland types defined in southeastern Minnesota, such as LaMoille Thick and those with Havana influences. Trailing and cordmarking in addition to bosses and wrapped stick impression are common design elements. Anfinson (1997: 56) notes that sand temper seems more common at Early Woodland sites and crushed rock is preferred during later periods. Fox Lake projectile points consist of stemmed, side-notched, corner-notched, and triangular unnotched commonly made from Tongue River silicate (Anfinson 1997: 66). It is possible smaller varieties of projectile points represent that incipient adoption of the bow and arrow in the region. Scrapers, knives, drills, flake tools, and choppers are also present.

Components of the Big Slough Site (21MU1) in Murray County are an important regional example of the Fox Lake Phase. This site produced bison, muskrat, dog/wolf, turtle, and bullhead, deer, beaver, badger, raccoon, skunk, gopher, duck, goose, crane, owl, northern pike, and mussels (Arzigian 2008: 69). Bone artifacts consisted of an awl, bone beads, worked mammal long bones, bison metapodial flesher, and a polished hawk humerus. Local chert, chalcedony, and silicified sediment common, but KRF and some obsidian are present. The Pedersen Site (21LN2) and Arthur Site (13DK27) are two other sites important for understanding the Fox Lake Phase in the PLR. The Alton Anderson Site (21WW4) is a possible Fox Lake burial site in Watonwan County, Minnesota. Thirty individuals were excavated in two discreet areas, a single burial event, comprised of young adults and children in flexed burials positions. Ochre and bone-stone tools were present including elk teeth.

After the Fox Lake Phase, Anfinson identifies the beginning of the Lake Benton Phase (1250–750 B.P.) as representing the decline of Hopewell influence, a continuation of intensive pedestrian bison hunting, new ceramic forms, and the presence of bow and arrow technologies. This corresponds to the Late Woodland elsewhere in Minnesota. Sites from the Lake Benton Phase are commonly located islands, peninsulas, or isthmuses, which may have served as protection from fires (Arzigian 2008: 75). The Pedersen Site (21LN2) is located on a peninsula 113 miles northwest of the Project in Lake Benton. This is a type site for the Lake Benton Phase in the region (Holley and Michlovic 2013: 47–49). Pedersen has produced samples with radiocarbon dates ranging from 705 +-80 B.P. to 1135 +-90 B.P (Buhta et al 2022; Anfinson 1997: 85).

Burial mounds become more common in the PLR during the Lake Benton Phase consisting of circular and linear forms. Burial mounds and lithic scatters tend to be concentrated on water ways during this time. The Shell Rock River is noted to have several burial mounds located both upstream and down from the Project. The Esse Mounds (21FE0024) are 1.5 miles northwest of the Project. Lithic technology is similar to Fox Lake with a continuation of smaller side-notched, unnotched triangular, and corner-notched projectile points made from local materials (Anfinson 1997: 80). Crushed rock is used as a temper in ceramics. Vessel forms are often sub-conoidal with flaring rims, vertical cordmarking, dentate impressions, and punctuate decorations. Anfinson (1997: 77) identifies that Lake Benton ceramics share similarities with those found in the St. Croix-Onamia area of Minnesota. Vessels tend to have thinner walls than in other periods.

4.2.1.7 Mississippian, Oneota, Plains Village, and Psinomani Traditions (750–950 B.P. to European Contact)

The Woodland Period ends throughout most of Minnesota around 950 B.P., with the exception of northern portions of the state (Arzigian 2008; Gibbon 2012). The dominant regional influence was the site of Cahokia in the American Bottom near the modern city of St. Louis, Missouri on the Mississippi River (Pauketat 2009). This influence is most clearly seen in archaeological sites near Red Wing, Minnesota, that contain Cahokian-style ceramics, large, palisaded villages, and evidence of corn horticulture. The presence of square earthen mounds may reflect Cahokian socio-religious belief systems. In Minnesota, the manifestation of this interaction is called the Silvernale Phase (Gibbon 2012).

A widespread cultural complex called Oneota in Minnesota is concurrent with the regional influences of Cahokia, lasting from approximately 950 B.P. until the time of French contact (Gibbon 2012). These mobile groups shared Middle Mississippian traits that included corn horticulture and shell-tempered ceramics (e.g., globular vessels with high rims), but lacked permanent structures, such as burial mounds. Oneota is manifested in different types called Orr (southeastern Minnesota), Blue Earth (south-central Minnesota), and Ogechie (central Minnesota). Siouan languages were spoken at the time of French contact (OSA 2019).

Plains Village groups from the region of the Missouri River in the Dakotas began to interact with the Oneota in western Minnesota after 950 B.P. (Anfinson 1997; Ahler and Kay 2007). These groups hunted bison, practiced corn horticulture, and lived within earth-lodges protected within palisaded forts (e.g., Double Ditch Site in North Dakota). Globular shaped ceramic jars with crushed rock temper are a hallmark technology of this period.

Psinomani groups are believed to be the ancestors of the modern Dakota people, who lived in east central Minnesota (Gibbon 2012). The principal ceramic type associated with this group is Sandy

Lake, whose form is more similar to a bowl rather than the globular jars of Oneota varieties. There is evidence of blended ceramic styles with Oneota Native Americans.

4.2.1.8 Late Precontact in Freeborn County

Anfinson (1997: 90–112) utilizes Great Oasis, Cambria, Big Stone, and Blue Earth phases to characterize the likely palimpsest of cultural activity occurring in the PLR during the late precontact. (See also Holley and Michlovic 2013.) The Great Oasis Site (21MU2) is a type locality in Faribault County west of the Project. Ceramics from here often have trailed lines with numerous motif types including diamonds and triangles. Projectile points are small triangular notched and unnotched varieties. Other tools include end scrapers, end hoes, knives, drills, and choppers. Lithic items are commonly made from local materials, but KRF is present to some extent. Artifact use is diverse including awls, chisels, quill flatteners, shaft wrenches, antler-tine flaking tools, bison scapula hoes, pendants, shell beads, and dippers. Animals exploited were bison, dog/wolf, beaver, lynx, striped skunk, muskrat, raccoon, pocket gopher, red fox, mink, badger, white-tailed deer, fish, and birds. Great Oasis produced radiocarbon assays dating from 975 +-65 B.P. and 1050 +-60 B.P. Houses are not identified in the PLR, nor are there any fortifications. A key feature of many Great Oasis Phase sites is the presence of maize kernels, sunflowers and/or squash, general indicators of a horticultural system.

The Cambria Site (21BE2), type site for the Cambria Phase, is located northwest of Mankato (Anfinson 1997: 96) It has been previously suggested to be part of a Cahokia-based trade network operated through Red Wing, Minnesota (Johnson 1986). This exchange system included the movement of bison meat, hide, clothing, exotics, and horticultural products. It yielded radiocarbon dates from 815 +-125 B.P. and 775 +-130 B.P. Ceramics are often globular in form and grit-tempered with constricted necks, pronounced shoulders, and smooth surfaces. The diversity of artifact and faunal remains in similar to Great Oasis sites. Grinding technology is varied also consisting of grooved stone mauls, celts, hammer-stones, grinding stones, and slab abraders. Characteristics of Cambria settlement patterns include: 1) large villages on the Minnesota River; 2) small sites on lakes and interior rivers; 3) small villages near large villages; and 4) burial sites.

Small, fortified villages become more common in the PLR of the Big Stone Phase (Anfinson 1997: 104). These include examples like the Hartford Beach Site (39RO5), Shady Dell Site (21TR6), or the village component of the Browns Valley Site (21TR5), which contain artificial ditches and bastions. Hartford Beach is also protected by steep slopes and produced dates ranging from 830+-70 B.P. and 650 +-70. Most of the fortified sites close to the Project can be found near the borders of South Dakota, North Dakota, and Minnesota. KRF becomes more common as a lithic material type suggesting regional influences from the west specifically in North Dakota where it is sourced. The variety of artifacts identified in Big Stone Phase sites can include corner-notched/triangular points, end side scrapers, drills, utilized flakes, grooved mauls, sandstone hoes, choppers, nutting stones; bone bison scapula hoes, metapodial flesher, and bone awls. Bison seems to be more important than horticultural production.

Overlapping the PLR, the Blue Earth Phase includes areas along the Little Sioux River in northwestern Iowa, the Blue Earth River in southcentral Minnesota, and the St. Croix-Mississippi rivers in southeast Minnesota and southwestern Wisconsin (Anfinson 1997: 112–114). Ceramics are typically shell-tempered and smooth surfaced. Sites in the region that are important for understanding this time period in the region. The Humphrey Site (21FA1) and Vosburg Site (21FA2) along Center Creek serve as key examples. Previously discussed sites such as Great Oasis

(21MU2), Big Slough (21MU1), Pedersen (21LN2), and Mountain Lake (21CO1) all contain Blue Earth components.

Complete vessels found at these sites consist of round bottomed, globular jars with handles that may also be grit tempered. Vessel rim interiors are often decorated with tool impressions or trailed lines that may be present on the shoulders. Chevron designs, vertical lines, and circular nodes are other design elements seen in ceramics. Lithics and groundstone technologies consist of unnotched projectile points, end scrapers, manos, abraders, and celts (Anfinson 1997: 112–117). Toolstone is made from fine gray chert, oolitic chert, white chert, and quartzite with less KRF use. Bone tools are scapula hoes, antler picks, awls, split beaver incisors, barbed harpoons, and bone tubes. Bison appear to be less prevalent, but other animal species are represented (e.g., beaver, elk). Horticulture is common with maize, beans, and sunflower forming cultigens. Anfinson (1997: 119) notes that many of the radiocarbon dates for this period fall between 950 B.P. and 440 B.P. There is little evidence for European trade goods or burials in the Cambria Phase.

4.2.2 Contact Period and Post-Contact (A.D. 1650 to Present)

The Wahpekute Dakota tribe occupied the area that became Freeborn County when the first Europeans arrived. Dakota tribes "occupied a vast territory, including nearly all of Minnesota, the Dakotas and a region of country west of the Missouri the Rocky Mountains, and northward to the British Possessions." Each band "had their own separate territory, or hunting rounds, but their claims of territory were often indefinite and conflicting" (Kiester 1896: 30).

The Fur Trade in Minnesota involving Europeans and Native Americans first started in the early 1600s and marked the beginning of contact between these two populations. The historical implications of this interaction were felt in numerous ways both economically and with great social consequence (e.g., smallpox). Throughout this early period up until the 1850s, fur drove much of the European exploration of Minnesota leading to the establishment of American settlements, including the Fort Snelling military post in 1824. In the first half of the nineteenth century, Ojibwe and Dakota Indian tribes in what would become Minnesota were coerced into signing several treaties that ceded vast swaths of their lands to the US government, including 100,000 acres of land at the confluence of the Mississippi and Minnesota rivers in 1805 and eventually "all their land east of the Mississippi" in 1837. Following these cessions, the territory was traversed and mapped by multiple expeditions for eventual settlement (MNHS 2024).

There were several expeditions into the region. French explorers Marquette and Joliet were among the first Europeans to reach the headwaters of the Mississippi, entering Minnesota in 1673 (American Journeys 2024). Canadian-born Jean-Baptiste Faribault traversed the area in the early nineteenth century as an explorer and trader possibly passing near the Project in 1833. He traded with Dakota at the Des Moines River to the west and later settled in Prairie du Chien, Wisconsin and established a trading post there. In 1836, French geographer Joseph Nicolas Nicollet (1786–1843) explored the Mississippi River to its source at Lake Itasca. With the "backing of the U.S. Army Corps of Topographical Engineers" he led expeditions in 1838 and 1839 "to explore the triangle of land bordered by Canada and the Mississippi and Missouri Rivers." His endeavors were also supported by the American Fur Company and private stakeholders. He produced topographical and hydrographical maps of the Upper Mississippi River Basin, as well as documented botanical and geological specimens throughout the region" (Smithsonian 2024). Nicollet's maps were published in 1842; "he gave names to many lakes and physical features or adopted those which were current," and area in which is now called Freeborn County was labeled 'Sisseton Country' on his map (Nicollet 1842).

Southern Minnesota remained Native American territory and unsettled until the mid-1850s, but for many years before that, trappers operated in the area. The Minnesota Territory was created in 1849. The Treaty of Traverse des Sioux in 1851 resulted in the cession of 21 million acres of Sisseton and Wahpeton Dakota bands land to the US government. It included all of the land in southern and western Minnesota Territory and smaller portions in Iowa and South Dakota. Following this and the 1851 Treaty of Mendota between the United States and the Sioux tribes of Minnesota (Mdewakanton and Wahpekute), an influx of white settler-colonists to the Minnesota Territory forced Native Americans from their ancestral lands and confined to reservations.

4.2.2.1 Establishment and Development of Freeborn County

Freeborn County was created in 1855, separating the territory from Blue Earth and Rice Counties. Freeborn County was created along with an additional twelve counties in an act from the Minnesota Territorial Legislature. Freeborn county is named for Wiliam Freeborn, a merchant and territorial legislature (Freeborn County History 2024).

The earliest European settlement within the county is linked to Ole Gulbrandson and his family, taking up residence in the township of Shell Rock, where he constructed a cabin in the spring of 1853. Two years later, William Rice and his family would follow, settling in Shell Rock City. Additional relatives of Mr. Rice would continue to settle in Shell Rock City in the following months. A townsite would be founded in the township of Albert Lea, where upon businesses began to emerge. A store, hotel, blacksmith, and sawmill would all be opened throughout 1855. Milton Morley would arrive in Spring of 1855, followed by George S. Ruble and Lorenzo Merry, who would settle in what is now Albert Lea (Freeborn County History 2024).

By January of 1857, the first judicial proceedings in the county took place, with Henry Boulton as plaintiff and C.T. Knapp as defendant, before the first Justice of the Peace, William Andrews. Both parties were represented by the same council, and both ordered to be beaten by the court. By August of the same year, the first schoolhouse would be constructed, as well as several places of worship. The first store would be opened in the Town of St. Nicholas, which is now defunct.

Following Minnesota's establishment as a territory and the treaties that removed indigenous peoples from their lands, the first wave of settlement to southern Minnesota began in 1856 and consisted mostly of "New England Yankees," American-born White people moving from eastern states, but nearly ceased within a year due to the financial Panic of 1857 (LOC 2021). In March 1857 a Wahpekute band of Santee Sioux carried out the Spirit Lake Massacre in Iowa at Spirit Lake, Lake Okoboji, and along the Des Moines River. The massacre resulted in the deaths of more than 30 White people. The threat proved to be a short-lived deterrent for White people from settling in the region. As more areas were ceded from Native American control, tribes were forcibly removed from the lands. A month after Minnesota gained statehood in 1858, "a group of Dakota traveled to Washington, D.C. to discuss their reservation," but were ultimately "pressured to cede the lands on the north side of the Minnesota River." Following the U.S.-Dakota War of 1862, "the Dakota were forced to give up all their remaining land in Minnesota, and the U.S. government canceled all treaties made with them" and they were eventually forcefully exiled from the land onto reservations (MNHS 2024).

Norwegian migration into southern Minnesota would steadily increase through the mid-late 1800s. In the early settlement period from 1850 to 1865, two large areas were marked out for Norwegian settlement. The southern area received the bulk of Norwegian pioneers, this includes

Freeborn County, as well as Houston, Mower, Dodge, Fillmore, and Olmsted counties. After the U.S.-Dakota War of 1862, Norwegians extensively began to occupy the region. Within Freeborn County, Norwegians occupied a settlement area extending from Worth County, Iowa, northward to the Le Suer River Valle. The First Norwegians went to Shell Rock Township in 1853 and were followed by large numbers in 1855. At this time, nearly 40% of Freeborn County was Norwegian. Freeman, Nunda, Albert Lea, Riceland, Bancroft, Manchester, Hartland, and Bath would all see an influx of Norwegians during this time. Norwegian migrants would increase from 10,811 to 83,867 in fifteen short years (1860–1875).

The majority of these migrants were born in Norway, but a portion migrated from surrounding states, New York, and Canada. The majority of Norwegians migrating to the United States were from rural areas in Norway, comprising roughly 78 percent of migrants to the United States. Much of the desirable farming land in the region was occupied by Norwegian settlement. The arrival of the railroad in 1862, the Minnesota and Pacific, further increased the influx of Norwegians into the area. Railroad owners would promote and campaign the settlement of Minnesota and Dakota in Scandinavian countries, land that was unappealing to much of the rest of Europe. By 1855, the Minnesota Territorial Legislature would pass an act that provided for an immigration commissioner to be stationed in New York to meet with immigrants and provide literature and information on Minnesota. Among the earliest prominent settlers was Danish born Claus Clausen who took up residence in nearby Austin, Minnesota. Clausen was head of the Norwegian-Lutheran congregation. Clausen briefly took up residence in Albert Lea prior to finding residence permanently in Austin (Qualey 1931).

In the 1940s, the onset of World War II increased the number of manufacturing jobs and other employment opportunities in larger cities, and many people began abandoning their farmsteads and small towns for opportunities in urban areas. Suburban developments in the second half of the twentieth century increased affordable, modern housing opportunities near urban centers.

4.2.3 Architecture

The first homes of settlers were primitive. The first dwellings were tents, sod shanties, or crude structures, and most settlers established and harvested their farm's crops before constructing a permanent home. The sod shanties were later replaced by log cabins. Root cellars were a necessity and built in the same manner as the sod houses. Rudimentary small barns that housed livestock were "made by piling straw over a skeleton of saplings and logs. The better ones were covered or thatched by a covering of the wiry slough hay" (Forrest 1947: 25).

A year or so after their establishment, settlers typically constructed a new frame house. The sod structures were not readily adaptable to alterations to meet evolving needs, nor were they easily upgraded with plumbing and electrical systems. It soon became more practical to replace buildings than to maintain and repair the aging structures (WHS n.d.). Modern advancements in methods and production of materials made it faster and more affordable to construct a house than ever before. Most houses constructed between 1860 and 1920 were built using the balloon frame technique. This method was developed in the mid-nineteenth century following the introduction of manufactured "uniform, dimensional lumber" in the 1850s. During this time, lumber and other mass-produced building materials became readily available and affordable. Nearly all houses constructed into the 1920s had balloon frame structures, and they were typically clad in wood lap siding or stucco. The balloon frame technique of construction fell out of favor in the 1920s when a "safer, faster, and cheaper" technique called platform framing was developed; it remains the standard wood framing method (WHS n.d.).

There were several contributing factors to the post-war building boom in America beyond providing housing for returning G.I.'s. Modern materials and technology that had been developed by the military was introduced to the public market. Wartime production plants and resources were redirected to create an ample variety of affordable, mass-produced building materials. Buildings that had been neglected due to financial instability and limited supply of building materials during the Great Depression and War could be repaired and updated. Original wood and stucco walls were obscured with a variety of modern cladding materials like aluminum, vinyl, asbestos, and manufactured wood. Wood sash windows were similarly replaced with modern frames; popular types were sash, casement, and sliding.

Technological advancements included the introduction of affordable, electrified appliances to the mass market. It became more advantageous to build a modern house than to retrofit an old house for modern appliances. Similarly, it was more advantageous to build new, larger farm structures to fit evolving needs. While their styles and building techniques vary, most of the late nineteenth and early twentieth century barns were constructed to shelter cattle and dairy cows or other varieties of livestock, and store feed in an overhead loft. Thanks to modern building materials and techniques, barns increased in scale, with larger footprints and tall roofs for expansive loft space. In the 1910s, barns were routinely built on concrete foundations, and in the by the 1920s, concrete blocks were used to construct basements and base walls (Noble and Wilhelm 2018). Apart from the barn, agricultural buildings are typically utilitarian in form and style, and devoid of ornamentation. The auxiliary structures serve various purposes in their support of farming activities. Pole barns are primitive in their construction and typically smaller in size and scale than barns. The rectangular-plan structure was built by hanging walls from timber posts that had been driven into the ground. They typically had dirt floors; shed, saltbox, or gable roofs; and one exposed side elevation. They served a variety of purposes, including sheltering livestock, storing feed or hay, or storing machinery and implements. After it was introduced in the mid-nineteenth century, lumber began to be used in their construction.

During the building boom after World War II, new building materials were introduced to the public. Thin metal sheeting (aluminum, galvanized steel, and corrugated sheet metal) was frequently employed to re-clad pole barns and other farm buildings that had been neglected since before the Great Depression. The cladding provided some structural support to aging structures but obscured or replaced original elements like timber poles and weatherboard cladding. Alternatively, many pole barns were demolished and replaced with modern structures. Today, modern pole barn construction is implemented for a variety of uses beyond the farmstead, including for commercial and residential purposes. Because of its method of construction, many machine sheds meet the definition of a pole barn. Generally taller and larger than pole barns, machine sheds have generally functioned as garages and storage buildings since they were developed. Plows, implements, tractors, and other machinery used for raising livestock and cultivating crops have continually evolved since the late nineteenth century. In reaction to growing variety and physical size of modern machinery, machine sheds progressively increased in size and scale. They are typically rectangular-plan and have a gable roof. Vehicular entry bays typically have sliding doors may be set in the gable-end wall, sidewall, or both. The building form was standardized in the post-war building boom. Its pole or plank frame structure was built with dimensional lumber, and the walls and roofs were faced with modern metal cladding sliding doors.

4.2.4 Transportation

Many trailways used by explorers and then settlers had been long-ago established by indigenous peoples. The routes were continually improved in the late nineteenth century. The American Fur Company and other commercial operations improved old while in other cases, government roads were established to provide direct routes between territorial forts and burgeoning cities. In the days "before the existence of railroads, state roads were deemed of great importance, being usually established between important points across two or more counties." In 1858, the state legislature enacted several laws that authorized the construction of state roads that crossed through southern Minnesota. In many instances, "some of these roads, attracting and directing the course of travel and traffic, in natural and convenient channels, served to create the necessity for, and prove the practicability of certain great lines of railway, subsequently built, of which they were the frontrunners" (Kiester 1896: 84). The major trails that connected trade hubs and cities were among the first routes to become state roads in the nineteenth century, and later highways in the first half of the twentieth century (MDH 1962).

Between 1854 and 1858, "twenty-seven railroads were incorporated in Minnesota Territory," but "most of them [were] speculative ventures that never laid track" (MIAC 2024). The state legislature passed an amendment that authorized $5 million "to aid in the land grant railroad companies, in the construction of their roads" (Kiester 1896: 86).

Settlement across southern Minnesota was greatly assisted by the introduction of railroads in the 1870s. The Southern Minnesota (Chicago, Milwaukee, St. Paul, and Pacific). It was built in 1870 between Albert Lea and Wells, the latter of which was platted "by a local railroad promoter and official" in anticipation of the railroad's arrival. Within a year, the line was extended to Winnebago. Delavan and Easton were also platted by Southern Minnesota promoters. In 1874, "the Minnesota Central (later a branch of the Southern Minnesota) connected Mankato to Wells via pre-existing Minnesota Lake" (Kiester 1896). Transportation facilities helped fuel the growth of Freeborn County. The Chicago, Milwaukee & St. Paul, The Rock Island, the Minneapolis & St. Louis, and the Illinois Central railroads all had stops in Albert Lea, continuing along in all directions (Kiester 1896).

The Progressive Era, "defined by the period between the 1880s and the end of World War I," led to "greater government involvement in providing essential community services, including transportation and utilities, and increased funding of public works. Their efforts coincided with the development of the automobile and the telephone, both of which dramatically improved communication within and between communities" (Ganzel 2009: 8:1). Development and improvements of rural county routes and the popularization of the automobile helped create wider trade networks and facilitated ease of travel between them.

US Highway 65 runs northwest/southeast along the western edge of the Project. US 65 was one of the original north/south routes of the US highway system. The original route entered Minnesota in Freeborn County, proceeding through Albert Lea heading north towards St. Paul. The US highway system was officially adopted in 1926, with the Albert Lea to Faribault route active into 1980. The route was completed by 1928 and would be paved as far south as Albert Lea by the 1930s. By 1934, Albert Lea would be connected to Minneapolis by what had been previously US 55 and State Route 50 (Munsch 2024).

5.0 Literature Review

5.1 Previously Recorded Cultural Resources

A cultural resource literature review was undertaken prior to Phase I Archeological Survey to identify known cultural resources documented in or within a one-mile buffer of the Project Area boundary. On July 3, 2024, Westwood Cultural Resources Manager Ryan Grohnke reviewed the Portal maintained by the OSA and the Minnesota SHPO.

The purpose of this initial literature review was to create an inventory of previously recorded cultural resources, including archaeological sites and historic architectural resources in the Project Area and surrounding on-mile buffer (approximately 3,267.63 acres). The background research and literature review would identify previous cultural resource investigations along with levels of disturbance and potential for sites within the Project Area and buffer. The review also included examining the National Register of Historic Places (NRHP) dataset, aerial photography, and historic mapping (**Exhibits 1** and **2**; **Table 1**).

The literature review completed by Mr. Grohnke did not identify any previously recorded archaeological sites or historic/architectural resources in the Project Area or APE. A single previously recorded archaeological site was recorded within one mile of the Project Area (**Table 2**; **Exhibits 1** and **2**). Site **21FE0126** is located approximately half a mile to the east of the Project Area and is a sparse lithic scatter located on a deflated bluff edge overlooking the left bank of the Shell Rock River. The scatter is located 250 meters southeast of the current river channel at the base of a north-south-oriented ridge line that is situated above what appears to have been an old blackwater pool. One piece of tan-colored chert shatter, two white quartz tertiary flakes, and one grayish-white tertiary flake of Swan River chert were identified and photographed, but not collected. The site was recorded in 2022 by Aaron J. Mayer of Augustana Archaeology Laboratory in Sioux Falls, South Dakota. This site is listed as undetermined for inclusion into the NRHP. There are no previously recorded sites in the Project Area or APE (OSA 2024).

No historic/architectural resources have been previously inventoried within the Project Area. Two resources were identified adjacent to the Project, boundary, with FE-SHE-0008, otherwise known as Bridge 24004 which is on US 65 over the Shell Rock River. Trunk Highway 65 itself is considered a historic resource, XX-ROD-00178. Neither resource will be impacted by the Project. Eight additional resources may be found within the one-mile boundary of the Project Area, and an additional cemetery, Greenwood Cemetery, identified in the USGS Geographic Names Information System (GNIS) Cemeteries database. (**Table 2**; **Exhibits 1** and **2**). None of the resources have been evaluated for listing in the NRHP.

Table 2: Previously Recorded Historic/Architectural Resources in One-Mile Buffer

Inventory No.	Historic Name	Address	NRHP Status	Project / Buffer
FE-SHE-00012	Culvert 24J01	CSAH 13 over East Branch Shell Rock River	Unevaluated	Buffer
FE-SHE-00011	Bridge 24524	TWP 26 over Shell Rock River	Unevaluated	Buffer
FE-SHE-00007	Bridge 89149	1.0 mi S of JCT TH 65 (carries CSAH 5 over Co Ditch # 16)	Unevaluated	Buffer
FE-SHE-00010	Bridge 24519	140th St over Shell Rock River	Unevaluated	Buffer

FE-GLE-00006	Bridge L5606	Railroad over STR 22	Unevaluated	Buffer
FE-GLE-00005	Bridge 24528	CSAH 13 over Shell Rock River	Unevaluated	Buffer
FE-GLE-00004	Glenville Methodist Episcopal Church	Glenville Methodist Episcopal Church	Unevaluated	Buffer
FE-GLE-00001	Glenville Creamery	1st St SE & River Rd	Unevaluated	Buffer
FE-SHE-00008	Bridge 24004	US 65 over Shell Rock River	Unevaluated	Buffer/Adjacent
XX-ROD-044	Trunk Highway 165	Trunk/US Highway 65	Unevaluated	Buffer/Adjacent
GNIS System	Greenwood Cemetery	Main St/150th St/CSAH 13	Unevaluated	Buffer

Key: Inventory No. = designation applied by SHPO; Name = unofficial name or resource type as listed on inventory form; Address = location as listed on inventory form, verified in GIS if possible; NRHP Status = eligibility or listing status in the NRHP; Project/Buffer = location within in Project Area or one-mile buffer.

5.2 Other Sources

An Illustrated Historical Atlas of the State of Minnesota (Andreas 1874) shows a farmhouse in the NE ¼ of Section 8, Township 103, Range 27, however it appears to be across the river and away from the Project. It also indicates that the road that would become US 65 was already being utilized in its present location.

A review of 1951 and 1979 historic aerial photographs indicate the Project Area was predominantly cultivated agricultural land. A driveway was shown running north/south to US 65 and is present within the Project Area. This led to several buildings that were constructed between 1951 and 1979, that are presently in various states of disrepair. These structures are outside of the APE and will not be affected by the Project (Historicaerials.com 2024).

6.0 Field Investigations

6.1 Archaeology

Fieldwork for the Project was carried out between June 6 and 11, 2024 with Rigden Glaab returning to complete field survey on June 25 and 26, 2024. Field investigators utilized shovel testing and visual survey to examine the APE. As indicated above, the APE is the 16 acres where Project design is proposed. The remaining 88.3 acres are not hosting Project facilities and are considered unused land for Project purposes. Rigden Glaab of Westwood meets the Secretary of the Interior's Professional Standards for Archaeology, as stipulated in 36 C.F.R. Part 61, and served as Principal Investigator for the Project. Fieldwork was performed by Principal Investigator Rigden Glaab, and Archaeological Technicians William Christensen, Emory Worrell, and Lindsay Schwartzkopf. GSV was not conducive to pedestrian survey, thus necessitating the utilization of shovel testing throughout much of the Project. Shovel test survey was carried out using a grid overlay on the proposed APE in 15-meter intervals, which conforms to archaeological standards outlined by the OSA (OSA 2024; **Exhibits 1** and **2**).

A total of 264 shovel tests were excavated across low-visibility areas of the APE (**Appendix B**). All of the shovel tests were negative for artifacts indicating the Project APE has limited potential for cultural resources. A typical sediment/soil profile consisted of a silty clay loam in the upper 30 cmbs transitioning to a sandy clay loam at the terminus, or around 40 cmbs to 50 cmbs. The color of a common sediment/soil profile ranges from dark brown (Munsell 10YR 3/3) in the upper layers to dark yellowish brown in the lower layers (Munsell 10YR 4/6). Although negative for cultural resources, several central shovel tests produced loose roadbed gravel. This may indicate a semi-paved road crossed the field in the past, which was not visible in historic aerials.

There were 164 potential shovel tests within the Project APE that were not excavated. The areas were not excavated due to a variety of reasons. These include wetlands/inundated areas, existing utility lines, major slopes (> 20°), and locations of significant previous disturbance. In all instances, Westwood archaeologists' field-confirmed each of these locations to identify disturbances.

While land use of the APE was almost entirely agricultural, grasses covered the APE at time of survey. The landscape has been continually utilized and modified over the years. Representative photographs of the Project Area can be viewed in **Appendix A**. *No cultural resources were identified during Westwood's Phase I archaeological survey*.

7.0 Summary and Recommendations

The archaeological survey of the Midwater Energy Storage Project identified no archaeological resources within the APE. It is recommended that no additional cultural resources investigations are warranted in the current APE, and that the Project be allowed to proceed as planned.

Westwood stresses that if construction plans are altered to include areas not previously surveyed, those locations must be examined for cultural resources. Although an archaeological survey was completed, the possibility of unidentified resources remains. If unrecorded archaeological sites are discovered during construction, all ground-disturbing activities in the area should stop and archaeologists at Westwood should be contacted. Further, if human remains are encountered during construction activities, all ground disturbing activity must cease, and local law enforcement must be notified. Minnesota Statute § 307.08, the Private Cemeteries Act, prohibits the intentional disturbance of human burials.

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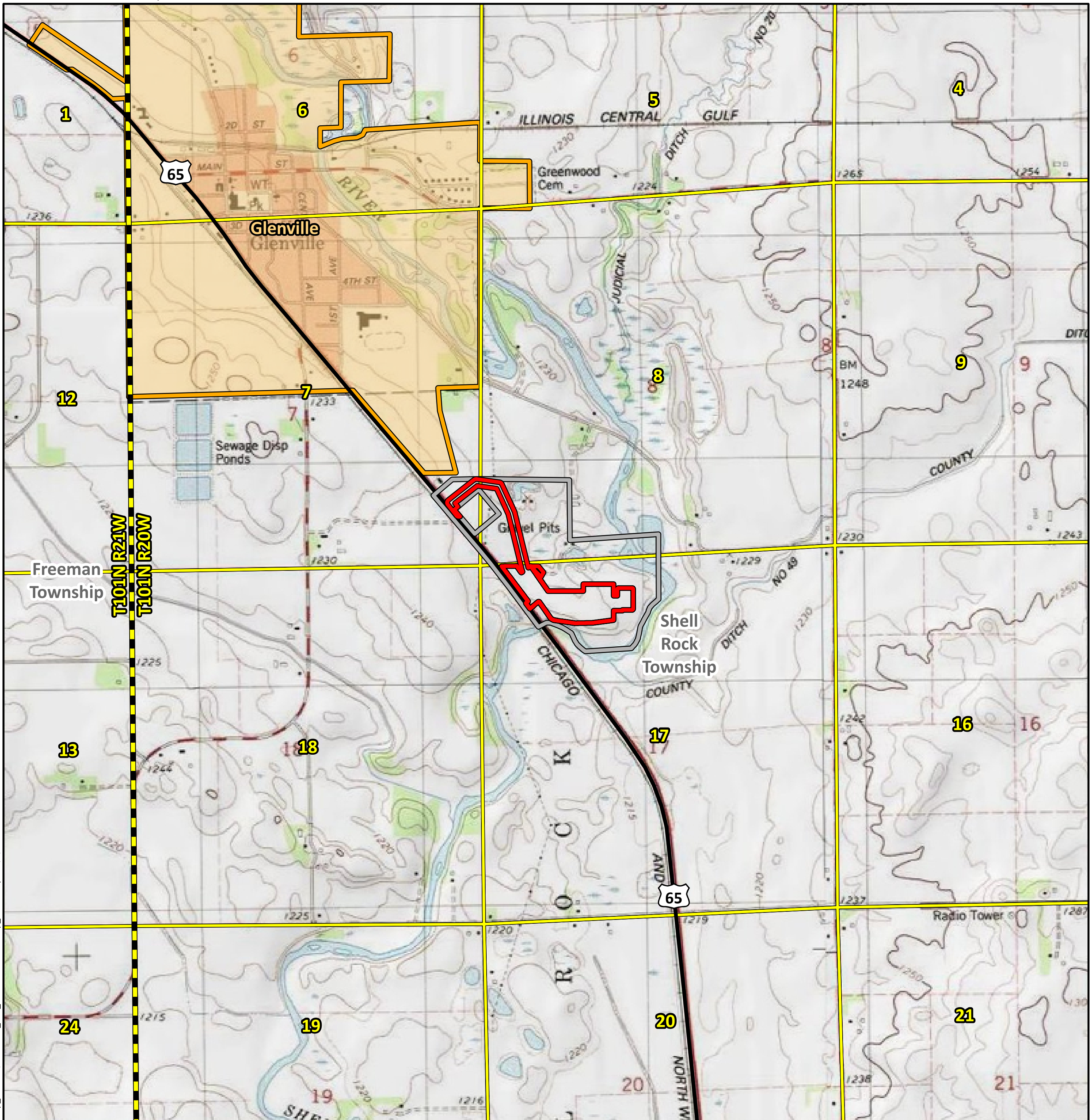

Data Source(s): Westwood (2024); ESRI WMS USA Topo & World Streets Basemap (Accessed 2024); ESRI (Various Dates); MnDOT & MnGeo (2023).

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Midwater Energy Storage Project

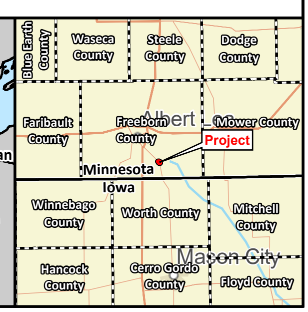
Freeborn County, Minnesota

Project Location & USGS Topography

Exhibit 1

Legend

- Project APE
- Unused Project Area
- Major Road
- Municipal Boundary
- Civil Township Boundary
- PLSS Township Boundary
- PLSS Section Boundary



Westwood

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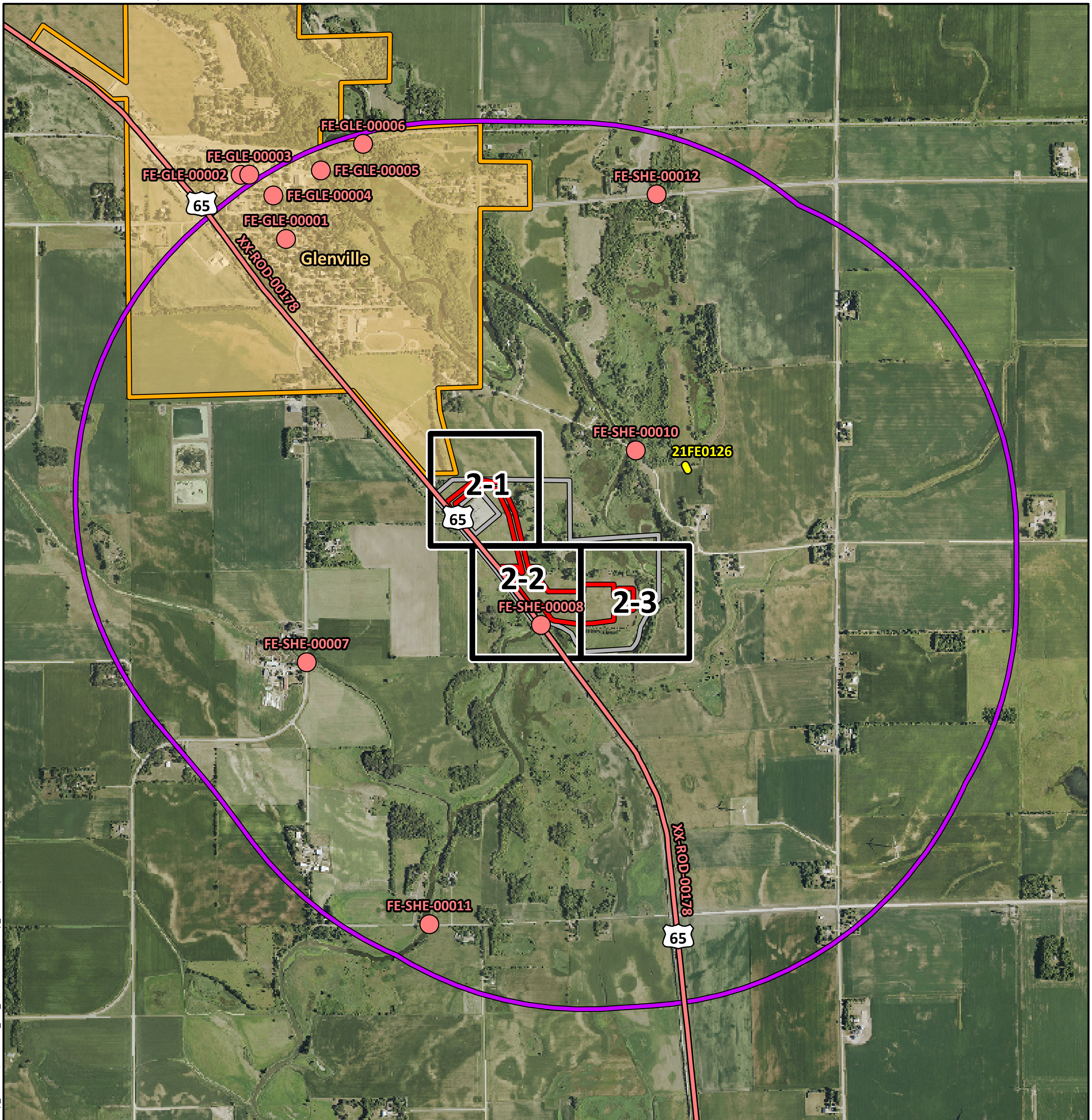

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Midwater Energy Storage Project

Freeborn County, Minnesota

MnSHIP Features, OSA Archaeological Site, & Negative Shovel Tests Overview Map

Exhibit 2

Legend

- Project APE
- Unused Project Area
- 1-Mile Unused Project Area Buffer
- Negative Shovel Tests Map Series Grid
- OSA Archaeological Site
- Municipal Boundary
- MnSHIP Inventoried Point
- MnSHIP Inventoried Line

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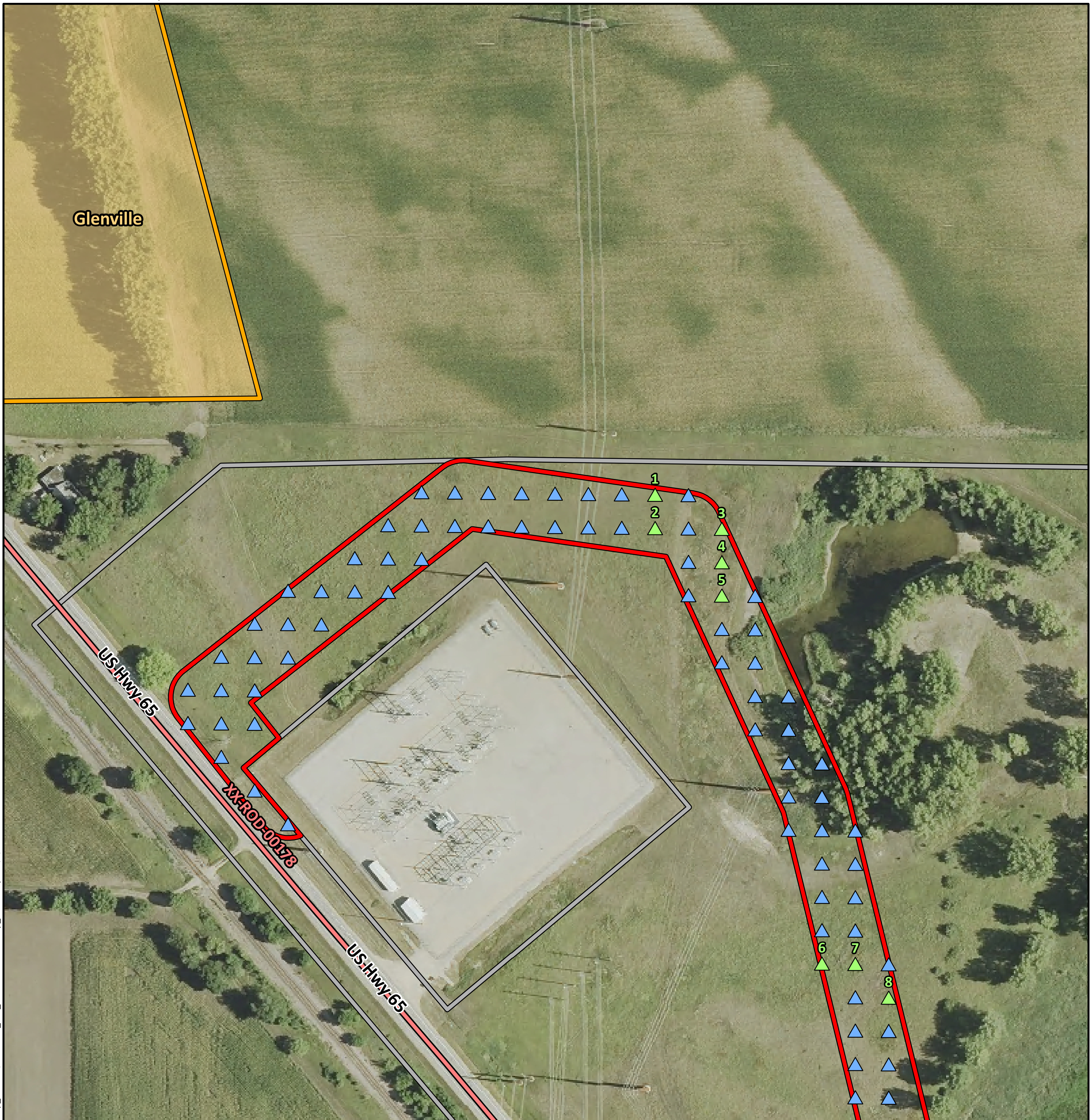

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Midwater Energy Storage Project

Freeborn County, Minnesota

Negative Shovel Tests Map Series

Exhibit 2 - 1

Westwood

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Legend

Project APE

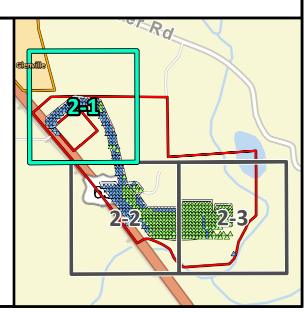
Unused Project Area

Municipal Boundary

Negative Shovel Test Location

No Dig Shovel Test Location

MnSHIP Inventoried Line



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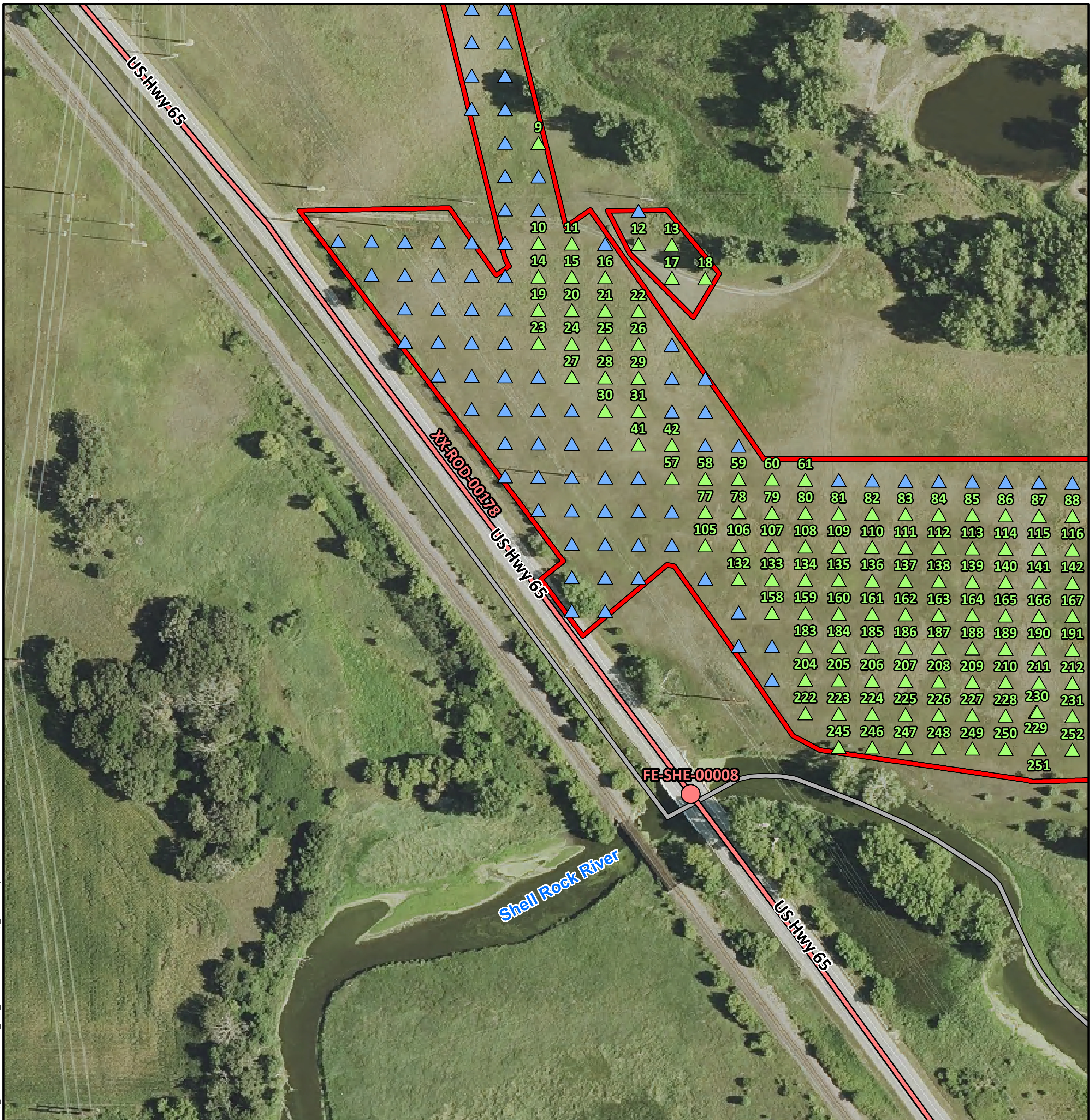

Data Source(s): Westwood (2024); Minnesota NAIP Imagery (2023); MnDOT & MnGeo (2023), Census Bureau (2023).

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Midwater Energy Storage Project

Freeborn County, Minnesota

Negative Shovel Tests Map Series

Exhibit 2 - 2

Westwood

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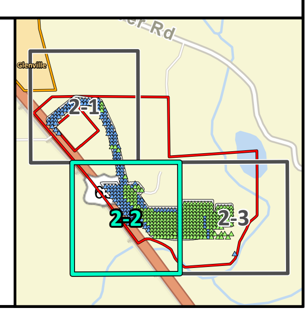
Legend

- Project APE
- Unused Project Area
- Negative Shovel Test Location
- No Dig Shovel Test Location
- MnSHIP Inventoried Point
- MnSHIP Inventoried Line



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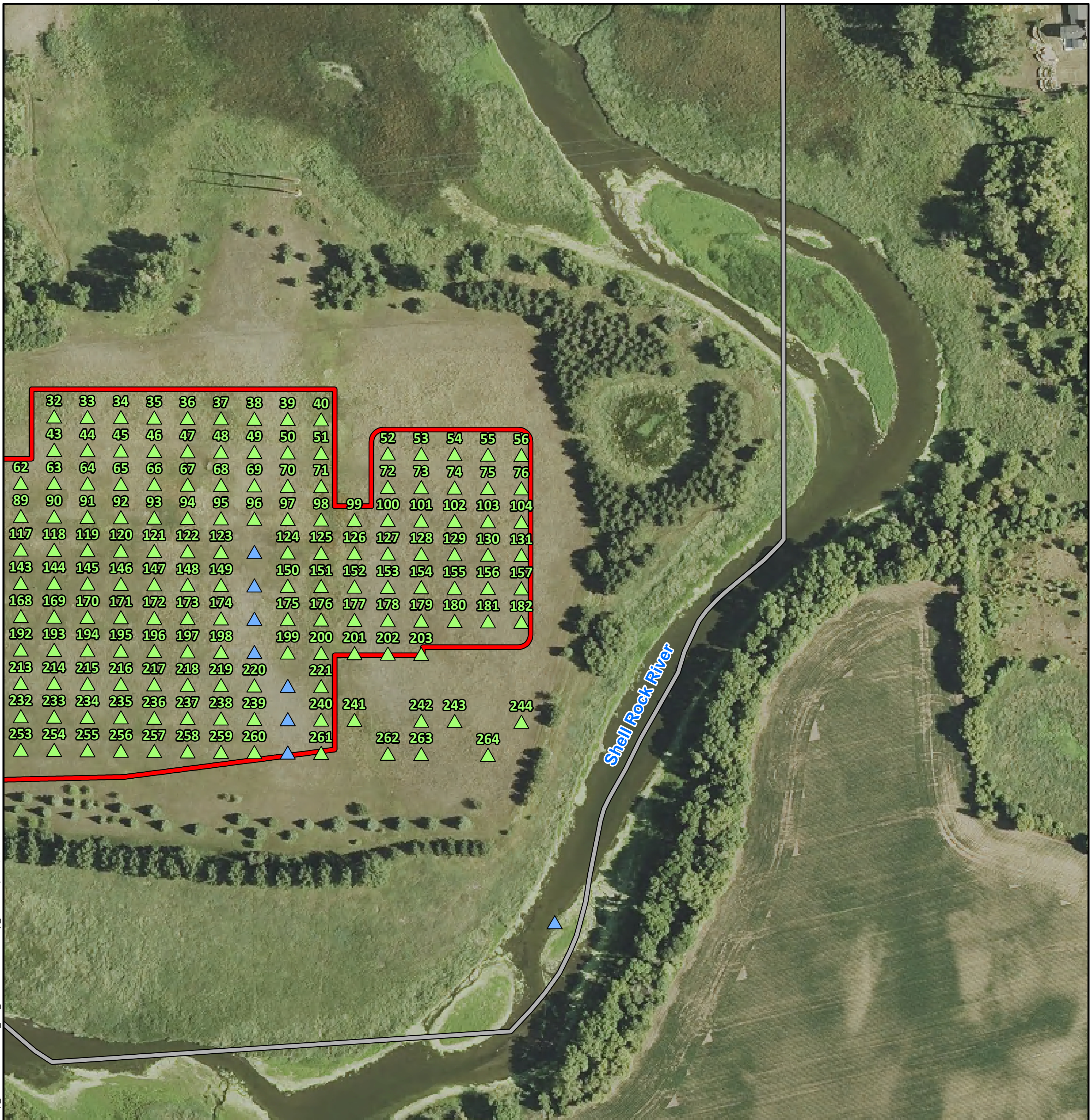

Data Source(s): Westwood (2024); Minnesota NAIP Imagery (2023); MnDOT & MnGeo (2023), Census Bureau (2023).

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Midwater Energy Storage Project

Freeborn County, Minnesota

Negative Shovel Tests Map Series

Exhibit 2 - 3

Westwood

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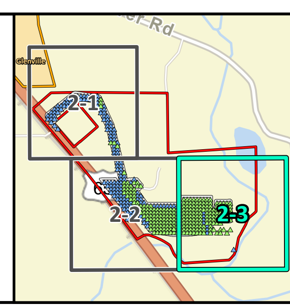
Legend

- Project APE
- Unused Project Area
- Negative Shovel Test Location
- No Dig Shovel Test Location



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Appendix A:
Representative Photos of Area of Potential Effect

Midwater BESS Project

Freeborn County, Minnesota

Photo 1: Overview of the Midwater Project Area, facing north (Shell Rock River in background).

Photo 2: Overview of the Midwater Project Area, facing east.

Photo 3: Typical surface visibility within the Midwater Project Area.

Photo 4: Overview of the Midwater Project Area, facing southwest.

Photo 5: Shovel Test ST-92 in the Midwater Project Area, (negative, total depth 30 cmbg).

Photo 6: Overview of the Midwater Project Area, facing southeast.

Photo 7: Shovel Test ST-1311 in the Midwater Project Area, (negative, total depth 36 cmbg.

Photo 8: Overview of the Midwater Project Area, facing northwest.

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Photo 9: Shovel Test ST-1631 in the Midwater Project Area, (negative, total depth 26 cmbg).

Photo 10: Overview of the Midwater Project Area, facing north.

Photo 11: Shovel Test ST-1627 in the Midwater Project Area, (negative, total depth 28 cmbg).

Photo 12: Overview of the Midwater Project Area, facing southeast.

Appendix B:
Shovel Test Results Table

Midwater BESS Project

Freeborn County, Minnesota

Westwood

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
1	ST-51	0-22	Compact silty clay loam, partially mottled	10YR 4/2	Negative	1% gravel throughout: located along transmission line
		22-30		10YR 4/4		
		Base of Excavation				
2	ST-90	0-27	Clay loam; silty clay loam	10YR 4/2	Negative	Located along transmission line
		27-37		10YR 4/4		
		Base of Excavation				
3	ST-92	0-30	Mottled compact loam with silty clay loam	10YR 4/2 (10YR 4/4)	Negative	20% gravel throughout (disturbed): located along transmission line
		Base of Excavation				
4	ST-132	0-30	Mottled compact loam with silty clay loam	10YR 4/2 (10YR 5/6)	Negative	20% gravel throughout (disturbed): located along transmission line
5	ST-171	0-34	Mottled compact loam with silty clay loam	10YR 4/2 (10YR 5/6)	Negative	20% gravel throughout (disturbed): located along transmission line
		Base of Excavation				
6	ST-501	0-27	Sandy clay loam; loamy clay	10YR 4/2	Negative	Located along transmission line
		27-38		10YR 4/4		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
7	ST-502	0-32	Loamy sand; loamy sand; sand	10YR 4/2 (10YR 5/6)	Negative	Semi-compact and no transition (disturbed), 10% gravel
		Base of Excavation				
8	ST-535	0-32	Dense clay loam with slightly silty clay loam	10YR 4/2 (10YR 5/6)	Negative	compact and no transition (disturbed), 10% gravel: located along transmission line
9	ST-961	0-20	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Mottled at base: northwestern portion of APA
		20-45		10YR 5/6		
		Base of Excavation				
10	ST-1114	0-19	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		19-26		10YR 3/6		
		Base of Excavation				
11	ST-1115	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Northwestern portion of APE
		22-33		10YR 4/4		
		Base of Excavation				
12	ST-1117	0-22	Loose sandy loam; clay sandy loam	10YR 4/3	Negative	40% gravel; road directly west
		22-40		10YR 5/4		
		Base of Excavation				
13	ST-1118	0-24	Sandy loam; sandy clay loam	10YR 4/3	Negative	20% gravel; road to the west

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		24-37		10YR 5/4		
		Base of Excavation				
14	ST-1164	0-19	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		19-26		10YR 3/6		
		Base of Excavation				
15	ST-1165	0-25	Sandy silt; sandy clay	10YR 3/3	Negative	Northwest portion of APE
		25-32		10YR 3/6		
		Base of Excavation				
16	ST-1166	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		21-31		10YR 3/6		
		Base of Excavation				
17	ST-1168	0-22	Sandy loam; clay sand (sand)	10YR 4/3	Negative	20% gravel throughout, located near two-track
		22-40		10YR 5/4 (10YR 6/4)		
		Base of Excavation				
18	ST-1169	0-25	Clay loam; sandy clay loam	10YR 4/3	Negative	20% gravel throughout, located near two-track
		25-43		10YR 5/4		
		Base of Excavation				
19	ST-1213	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Mottled throughout: northwestern portion of APE
		23-28		10YR 3/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
20	ST-1214	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		23-29		10YR 3/6		
		Base of Excavation				
21	ST-1215	0-29	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		29-34		10YR 3/6		
		Base of Excavation				
22	ST-1216	0-30	Sandy sil; sandy clay	10YR 4/2		Northwest porion of APE
		30-43		10YR 4/4		
		Base of Excavation				
23	ST-1261	0-15	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		15-27		10YR 3/6		
		Base of Excavation				
24	ST-1262	0-18	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		18-29		10YR 3/6		
25	ST-1263	0-18	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		18-31		10YR 3/6		
		Base of Excavation				
26	ST-1264	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Northwestern portion of APE
		26-38		10YR 4/4		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
27	ST-1309	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		17-27		10YR 3/6		
		Base of Excavation				
28	ST-1310	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		20-29		10YR 3/6		
		Base of Excavation				
29	ST-1311	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		28-36		10YR 3/6		
		Base of Excavation				
30	ST-1357	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Mottled and disturbed
		20-28		10YR 3/6		
		Base of Excavation				
31	ST-1358	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Mottled and disturbed
		28-38		10YR 3/6		
		Base of Excavation				
32	ST-1373	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-39		10YR 4/4		
		Base of Excavation				
33	ST-1374	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Northeastern portion of APE
		17-26		10YR 3/6		
		Base of Excavation				
34	ST-1375	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Northeastern portion of APE

Westwood

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		23-31		10YR 3/6		
		Base of Excavation				
35	ST-1376	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Northeastern portion of APE
		23-31		10YR 3/6		
		Base of Excavation				
36	ST-1377	0-25	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout; Northeastern portion of APE
		25-39		10YR 4/4		
		Base of Excavation				
27	ST-1378	0-32	Sandy silt; sandy clay	10YR 3/3	Negative	Northeastern portion of APE
		32-37		10YR 3/6		
		Base of Excavation				
28	ST-1379	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Northeastern portion of APE
		23-31		10YR 3/6		
		Base of Excavation				
39	ST-1380	0-30	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Mottled at base, gravel throughout
		30-42		10YR 4/4		
		Base of Excavation				
40	ST-1381	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Northeastern portion of APE
		20-33		10YR 3/6		
		Base of Excavation				
41	ST-1404	0-15	Sandy silt; sandy clay	10YR 3/3	Negative	Mottled and disturbed

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		15-20		10YR 3/6		
		Base of Excavation				
42	ST-1405	0-24	Sandy silt; sandy clay	10YR 3/3	Negative	Mottled and disturbed, light gravels throughout
		24-28		10YR 3/6		
		Base of Excavation				
43	ST-1419	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		22-37		10YR 4/4		
		Base of Excavation				
44	ST-1420	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-37		10YR 4/4		
		Base of Excavation				
45	ST-1421	0-14	Sandy silt; sandy clay	10YR 3/3	Negative	Northeast portion of the Project Area
		14-24		10YR 3/6		
		Base of Excavation				
46	ST-1422	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Northeast portion of the Project Area
		22-31		10YR 3/6		
		Base of Excavation				
47	ST-1423	0-23	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		23-38		10YR 4/4		
		Base of Excavation				
48	ST-1424	0-30	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		30-42		10YR 4/4		
		Base of Excavation				
49	ST-1425	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Northeast portion of the Project Area
		28-39		10YR 3/6		
		Base of Excavation				
50	ST-1426	0-40	Sandy loam; sandy clay loam	10YR 3/1	Negative	Northeast portion of the Project Area
		40-50		10YR 2/1 (10YR 3/6)		
		Base of Excavation				
51	ST-1427	0-23	Sandy loam; sandy clay loam	10YR 3/1	Negative	Northeast portion of the Project Area
		23-37		10YR 2/1 (10YR 3/6)		
		Base of Excavation				
52	ST-1429	0-31	Silty clay loam; clay loam	10YR 4/3	Negative	2% gravel throughout
		31-40		10YR 5/4		
		Base of Excavation				
53	ST-1430	0-29	Silty loam; sand	10YR 4/3	Negative	2% gravel throughout
		29-43		10YR 5/4		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
54	ST-1431	0-35	Silty loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout
		35-47		10YR 5/4		
		Base of Excavation				
55	ST-1432	0-30	Sandy loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout; limestone inclusions
		30-47		10YR 5/4		
		Base of Excavation				
56	ST-1433	0-34	Sandy loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout
		34-47		10YR 5/4		
		Base of Excavation				
57	ST-1450	0-21	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Mottled with shallow soils, disturbed
		21-30		10YR 5/6		
		Base of Excavation				
58	ST-1451	0-24	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		24-33		10YR 3/6		
		Base of Excavation				
59	ST-1452	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		22-29		10YR 3/6		
		Base of Excavation				
60	ST-1453	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		21-29		10YR 3/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
61	ST-1454	0-16	Sandy silt; sandy clay	10YR 3/3	Negative	Northwestern portion of APE
		16-26		10YR 3/6		
		Base of Excavation				
62	ST-1463	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		17-24		10YR 3/6		
		Base of Excavation				
63	ST-1464	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Central portion of APE
		22-33		10YR 4/4		
		Base of Excavation				
64	ST-1465	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		28-34		10YR 3/6		
		Base of Excavation				
65	ST-1466	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		21-28		10YR 3/6		
		Base of Excavation				
66	ST-1467	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		21-31		10YR 3/6		
		Base of Excavation				
67	ST-1468	0-24	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Central portion of APE
		24-35		10YR 4/4		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
68	ST-1469	0-43	Sandy silt; sandy clay	10YR 3/3	Negative	Light gravel throughout; northeastern portion of APE
		43-50		10YR 3/6		
		Base of Excavation				
69	ST-1470	0-16	Sandy loam; sandy clay loam	10YR 3/1	Negative	Northeastern portion of APE
		16-30		10YR 3/6		
		Base of Excavation				
70	ST-1471	0-16	Sandy loam; sandy clay loam	10YR 3/1	Negative	Mottled at base
		16-31		10YR 3/6 (10YR 2/1)		
		Base of Excavation				
71	ST-1472	0-27	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Rounded gravel at base
		27-38		10YR 4/4		
		Base of Excavation				
72	ST-1474	0-36	Silty loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout
		36-40		10YR 5/4		
		Base of Excavation				
73	ST-1475	0-33	Silty loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout
		33-47		10YR 5/4		
		Base of Excavation				
74	ST-1476	0-32	Silty loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		32-44		10YR 5/4		
		Base of Excavation				
75	ST-1477	0-33	Silty loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout
		33-44		10YR 5/4		
		Base of Excavation				
76	ST-1478	0-24	Silty loam; sand (sandy loam)	10YR 4/3	Negative	2% gravel throughout
		24-37		10YR 5/4		
		Base of Excavation				
77	ST-1495	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		21-29		10YR 3/6		
		Base of Excavation				
78	ST-1496	0-29	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Western portion of APE
		29-39		10YR 4/4		
		Base of Excavation				
79	ST-1497	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		22-26		10YR 3/6		
		Base of Excavation				
80	ST-1498	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		28-36		10YR 3/6		
		Base of Excavation				
81	ST-1499	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		22-26		10YR 3/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
82	ST-1500	0-26	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		26-33		10YR 3/6		
		Base of Excavation				
83	ST-1501	0-24	Silty clay loam; sandy clay loam	10YR 4/2	Negative	3% gravel throughout
		24-34		10YR 4/4		
		Base of Excavation				
84	ST-1502	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Light gravel throughout
		28-31		10YR 3/6		
		Base of Excavation				
85	ST-1503	0-26	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		26-32		10YR 3/6		
		Base of Excavation				
86	ST-1504	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		21-32		10YR 3/6		
		Base of Excavation				
87	ST-1505	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	1% gravel throughout
		22-28		10YR 4/4		
		Base of Excavation				
88	ST-1506	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		28-34		10YR 3/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
89	ST-1507	0-19	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		19-28		10YR 3/6		
		Base of Excavation				
90	ST-1508	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	1% gravel throughout
		26-38		10YR 4/4		
		Base of Excavation				
91	ST-1509	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	1% gravel throughout
		22-35		10YR 3/6		
		Base of Excavation				
92	ST-1510	0-24	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		24-32		10YR 3/6		
		Base of Excavation				
93	ST-1511	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		21-28		10YR 3/6		
		Base of Excavation				
94	ST-1512	0-24	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Central portion of APE
		24-36		10YR 4/4		
		Base of Excavation				
95	ST-1513	0-25	Loam; loamy clay	10YR 4/2	Negative	Eastern portion of APE; mottled throughout
		25-30		10YR 4/4		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
96	ST-1514	0-23	Sandy loam; sandy clay loam	10YR 3/1	Negative	Eastern portion of APE
		23-32		10YR 3/6		
		Base of Excavation				
97	ST-1515	0-35	Sandy loam; sand	10YR 4/2	Negative	10% rounded gravel throughout
		35-45		10YR 4/4		
		Base of Excavation				
98	ST-1516	0-19	Sandy loam; sandy clay loam	10YR 3/1	Negative	Eastern portion of APE
		19-29		10YR 3/3		
		Base of Excavation				
99	ST-1517	0-10	Sandy loam; sandy loam	10YR 3/1	Negative	Low drainage area – 5% gravel in mottled sub
		30-40		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
100	ST-1518	0-20	Sandy loam; sandy clay loam	10YR 4/2	Negative	Disturbed area
		20-27		10YR 4/4		
		Base of Excavation				
101	ST-1519	0-26	Sandy loam; sandy clay loam	10YR 3/1	Negative	Eastern portion of APE
		26-33		10YR 3/3		
		Base of Excavation				
102	ST-1520	0-21	Silty loam; sandy clay loam	10YR 4/3	Negative	Gravel throughout
		21-39		10YR 5/4		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
103	ST-1521	0-34	Silty clay loam; clay loam	10YR 4/3	Negative	Gravel throughout
		34-44		10YR 5/4		
		Base of Excavation				
104	ST-1522	0-27	Silty clay loam; clay loam	10YR 4/3	Negative	Gravel throughout
		27-43		10YR 5/4		
		Base of Excavation				
105	ST-1539	0-24	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		24-29		10YR 3/6		
		Base of Excavation				
106	ST-1540	0-25	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		25-30		10YR 3/6		
		Base of Excavation				
107	ST-1541	0-18	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		18-30		10YR 3/6		
		Base of Excavation				
108	ST-1542	0-19	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		19-31		10YR 3/6		
		Base of Excavation				
109	ST-1543	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		20-29		10YR 3/6		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
110	ST-1544	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Potential road gravel, with heavy deposits of calcium and a gravel lens at 15cmbs
		17-27		10YR 3/6		
		Base of Excavation				
111	ST-1545	0-28	Silty clay loam; sandy clay loam	10YR 4/2	Negative	West-central portion of APE; 3% gravel throughout
		28-38		10YR 4/4		
		Base of Excavation				
112	ST-1546	0-26	Sandy silt; sandy clay	10YR 3/3	Negative	West-central portion of APE
		26-31		10YR 3/6		
		Base of Excavation				
113	ST-1547	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Unmodified faunal remains (long bone fragments)
		23-34		10YR 3/6		
		Base of Excavation				
114	ST-1548	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		17-28		10YR 3/6		
		Base of Excavation				
115	ST-1549	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		22-39		10YR 4/4		
		Base of Excavation				
116	ST-1550	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		23-34		10YR 3/6		
		Base of Excavation				
117	ST-1551	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		22-29		10YR 3/6		
		Base of Excavation				
118	ST-1552	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		22-33		10YR 5/2		
		Base of Excavation				
119	ST-1553	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Central portion of APE
		26-37		10YR 4/4		
		Base of Excavation				
120	ST-1554	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		23-31		10YR 3/6		
		Base of Excavation				
121	ST-1555	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Heavy gravel lens at 8cmbs
		21-33		10YR 3/6		
		Base of Excavation				
122	ST-1556	0-18	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		18-30		10YR 4/4		
		Base of Excavation				
123	ST-1557	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Eastern portion of APE

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		28-39		10YR 3/6		
		Base of Excavation				
124	ST-1559	0-22	Sandy loam; sand	10YR 4/2	Negative	10% rounded gravel throughout and mottled
		22-32		10YR 4/4		
		Base of Excavation				
125	ST-1560	0-12	Sandy loam; sandy clay loam	10YR 3/1	Negative	Low area near drainage, mottled soils
		12-33		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
126	ST-1561	0-10	Sandy loam; sandy clay loam	10YR 3/1	Negative	Low area near drainage, mottled soils
		10-30		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
127	ST-1562	0-20	Sandy loam; sandy clay loam	10YR 3/1	Negative	Low area near drainage,
		20-33		10YR 3/3		
		Base of Excavation				
128	ST-1563	0-35	Sandy loam; sandy clay loam	10YR 3/1	Negative	5cm root mat
		35-45		10YR 3/3		
		Base of Excavation				
129	ST-1564	0-29	Sandy loam; sandy clay loam	10YR 4/3	Negative	Gravel throughout
		29-40		10YR 5/4		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
130	ST-1565	0-28	Sandy loam; sandy clay loam	10YR 4/3	Negative	Gravel throughout
		28-47		10YR 5/4		
		Base of Excavation				
131	ST-1566	0-32	Sandy loam; sandy clay loam	10YR 4/3	Negative	Gravel throughout
		32-42		10YR 5/4		
		Base of Excavation				
132	ST-1583	0-27	Sandy loam; sand	10YR 4/2	Negative	Semi translucent brown natural chert found in vicinity
		27-33		10YR 4/4		
		Base of Excavation				
133	ST-1584	0-30	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Light gravel throughout
		30-41		10YR 4/4		
		Base of Excavation				
134	ST-1585	0-26	Sandy silt; sandy clay	10YR 3/3	Negative	Heavy to moderate gravel at base
		26-32		10YR 3/6		
		Base of Excavation				
135	ST-1586	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	30% gravel throughout
		22-30		10YR 3/6		
136	ST-1587	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		22-28		10YR 3/6		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
137	ST-1588	0-28	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Western portion of APE
		28-39		10YR 4/4		
		Base of Excavation				
138	ST-1589	0-27	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		27-32		10YR 3/6		
		Base of Excavation				
139	ST-1590	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-32		10YR 4/4		
		Base of Excavation				
140	ST-1591	0-20	Sandy silt with clay mottling	10YR 4/4	Negative	Heavily modeled, potential old gravel road, electrical wire found in first 10 cm
		Base of Excavation				
141	ST-1592	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		22-33		10YR 4/4		
		Base of Excavation				
142	ST-1593	0-15	Sandy silt; sandy clay	10YR 3/3	Negative	Heavy gravel lens at transition
		15-24		10YR 3/6		
		Base of Excavation				
143	ST-1594	0-25	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		25-31		10YR 3/6		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
144	ST-1595	0-30	Silty clay loam (Sandy clay)	10YR 4/2 (10YR 5/2)	Negative	Disturbed and mottled, gravel throughout and no transition
		Base of Excavation				
145	ST-1596	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-33		10YR 4/4		
		Base of Excavation				
146	ST-1597	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		17-32		10YR 3/6		
		Base of Excavation				
147	ST-1598	0-18	Sandy silt; sandy clay	10YR 3/3	Negative	Heavy gravel lens at 15 cm
		18-29		10YR 3/6		
		Base of Excavation				
148	ST-1599	0-25	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel lens at 25-30 cmbs – road gravel
		25-37		10YR 4/4		
		Base of Excavation				
149	ST-1600	0-25	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Mottles throughout
		25-35		10YR 4/4		
		Base of Excavation				
150	ST-1602	0-23	Sandy loam; sandy clay loam	10YR 3/1	Negative	Mottled at base

Westwood

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		23-37		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
151	ST-1603	0-25	Sandy loam; sandy clay loam	10YR 3/1	Negative	Mottled at base
		25-34		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
152	ST-1604	0-8	Sandy loam; sandy loam	10YR 3/1	Negative	Low drainage - Mottled at base
		14824		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
153	ST-1605	0-25	Sandy loam; sandy clay loam	10YR 4/2	Negative	Disturbed area
		25-35		10YR 4/4		
		Base of Excavation				
154	ST-1606	0-38	Sandy loam; sandy clay loam	10YR 3/1	Negative	Eastern portion of APE
		38-50		10YR 3/3		
		Base of Excavation				
155	ST-1607	0-24	Silty loam; silty clay loam	10YR 4/3	Negative	Gravel throughout
		24-40		10YR 5/4		
		Base of Excavation				
156	ST-1608	0-32	Silty clay loam; clay loam	10YR 4/3	Negative	Eastern portion of APE
		32-47		10YR 5/4		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
157	ST-1609	0-27	Silty clay loam; clay loam	10YR 4/3	Negative	Gravel throughout
		27-41		10YR 5/4		
		Base of Excavation				
158	ST-1624	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		22-24		10YR 3/6		
		Base of Excavation				
159	ST-1625	0-25	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		25-30		10YR 3/6		
		Base of Excavation				
160	ST-1626	0-21	Silty loam; sandy loam	10YR 3/3	Negative	30% gravel beginning at transition
		21-30		10YR 3/6		
		Base of Excavation				
161	ST-1627	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		22-28		10YR 3/6		
		Base of Excavation				
162	ST-1628	0-25	Silty clay loam; sandy clay loam	10YR 4/2	Negative	20% gravel throughout
		25-37		10YR 5/6		
		Base of Excavation				
163	ST-1629	0-31	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		31-39		10YR 3/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
164	ST-1630	0-24	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Slight gravel throughout
		24-38		10YR 4/4		
		Base of Excavation				
165	ST-1631	0-15	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		15-26		10YR 3/6		
		Base of Excavation				
166	ST-1632	23	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		23-38		10YR 4/4		
		Base of Excavation				
167	ST-1633	0-26	Sandy loam; sandy clay	10YR 3/3	Negative	Central portion of APE
		26-29		10YR 3/6		
		Base of Excavation				
168	ST-1634	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		20-29		10YR 3/6		
		Base of Excavation				
169	ST-1635	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-40		10YR 4/4		
		Base of Excavation				
170	ST-1636	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		26-26		10YR 4/4		Gravel throughout
		Base of Excavation				
171	ST-1637	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		20-32		10YR 3/6		
		Base of Excavation				
172	ST-1638	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		22-30		10YR 3/6		
		Base of Excavation				
173	ST-1639	0-25	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Possible road gravel
		25-36		10YR 4/4		
		Base of Excavation				
174	ST-1640	0-31	Sandy silt; sandy clay	10YR 3/3	Negative	Light gravel throughout
		31-41		10YR 3/6		
		Base of Excavation				
175	ST-1642	0-30	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Mottling at base
		30-42		10YR 4/4		
		Base of Excavation				
176	ST-1643	0-31	Sandy loam; sandy clay loam	10YR 4/2	Negative	10% gravel throughout
		31-40		10YR 4/4		
		Base of Excavation				
177	ST-1644	0-28	Sandy loam; sandy clay loam	10YR 3/1	Negative	Low area near drainage with mottled sub

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		28-44		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
178	ST-1645	0-24	Sandy loam; sandy clay loam	10YR 4/2	Negative	20% rounded gravels < 2 cm
		24-32		10YR 4/3		
		Base of Excavation				
179	ST-1646	0-35	Sandy loam; sandy clay loam	10YR 3/1	Negative	
		35-40		10YR 3/3		
		Base of Excavation				Eastern portion of APE
180	ST-1647	0-23	Sandy loam; sandy clay loam	10YR 4/3	Negative	
		23-38		10YR 5/4		
		Base of Excavation				Gravel throughout
181	ST-1648	0-21	Clay loam; sandy clay loam	10YR 4/3	Negative	Gravel throughout
		21-36		10YR 5/4		
		Base of Excavation				
182	ST-1649	0-25	Sandy clay loam; silt clay loam	10YR 3/3	Negative	Eastern portion of APE
		25-37		10YR 4/6		
		Base of Excavation				
183	ST-1663	0-20	Clay loam; sandy clay loam	10YR 4/2	Negative	
		20-30		10YR 4/6		
		Base of Excavation				Western portion of APE
184	ST-1664	0-38	Clay loam; sandy clay loam	10YR 3/3	Negative	Gravel throughout

Westwood

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		38-45		10YR 3/6		
		Base of Excavation				
15	ST-1665	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		21-27		10YR 3/6		
		Base of Excavation				
186	ST-1666	0-27	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		27-38		10YR 4/4		
		Base of Excavation				
187	ST-1667	0-24	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		24-34		10YR 3/6		
		Base of Excavation				
188	ST-1668	0-27	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Compact with gravel throughout
		27-37		10YR 4/4		
		Base of Excavation				
189	ST-1669	0-24	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		24-32		10YR 3/6		
		Base of Excavation				
190	ST-1670	0-24	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		24-35		10YR 4/4		
		Base of Excavation				
191	ST-1671	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		22-32		10YR 3/6		Central portion of APE
		Base of Excavation				
192	ST-1672	0-23	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		24-34		10YR 3/6		
		Base of Excavation				
193	ST-1673	0-24	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		24-36		10YR 4/4		
		Base of Excavation				
194	ST-1674	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-40		10YR 4/4		
		Base of Excavation				
195	ST-1675	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		17-27		10YR 3/6		
		Base of Excavation				
196	ST-1676	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Light gravel throughout
		21-31		10YR 3/6		
		Base of Excavation				
197	ST-1677	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		21-31		10YR 3/6		
		Base of Excavation				
198	ST-1678	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel and some mottling

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Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		26-41		10YR 4/4		
		Base of Excavation				
199	ST-1680	0-15	Sandy loam; sandy clay loam	10YR 3/1	Negative	Mottled at base
		15-40		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
200	ST-1681	0-18	Sandy loam; sandy clay loam	10YR 3/1	Negative	Mottled at base, near drainage
		18-29		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
201	ST-1682	0-18	Sandy loam; sandy clay loam	10YR 3/1	Negative	Mottled at base, near drainage
		18-38		10YR 3/3 (10YR 2/1)		
		Base of Excavation				
202	ST-1683	0-23	Sandy loam; sandy clay loam	10YR 3/1	Negative	Eastern portion of APE
		23-33		10YR 3/3		
		Base of Excavation				
203	ST-1684	0-40	Clay loam; sandy clay loam	10YR 3/1	Negative	Eastern portion of APE
		40-50		10YR 3/3		
		Base of Excavation				
204	ST-1701	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Western portion of APE

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Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		26-34		10YR 4/4		
		Base of Excavation				
205	ST-1702	0-23	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Western portion of APE
		23-36		10YR 4/4		
		Base of Excavation				
206	ST-1703	0-25	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		25-33		10YR 3/6		
		Base of Excavation				
207	ST-1704	0-21	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Western portion of APE
		21-30		10YR 4/4		
		Base of Excavation				
208	ST-1705	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Western portion of APE
		20-29		10YR 3/6		
		Base of Excavation				
209	ST-1706	0-27	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		27-40		10YR 4/4		
		Base of Excavation				
210	ST-1707	0-18	Sandy silt; sandy clay	10YR 3/3	Negative	Lens of gravel at transition
		18-28		10YR 3/6		
		Base of Excavation				

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Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
211	ST-1708	0-21	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		21-38		10YR 5/4		
		Base of Excavation				
212	ST-1709	0-30	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		30-40		10YR 3/6		
		Base of Excavation				
213	ST-1710	0-21	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		21-27		10YR 3/6		
		Base of Excavation				
214	ST-1711	0-27	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		27-40		10YR 4/4		
		Base of Excavation				
215	ST-1712	0-26	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Gravel throughout
		26-38		10YR 4/4		
		Base of Excavation				
216	ST-1713	0-22	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		22-32		10YR 3/6		
		Base of Excavation				
217	ST-1714	0-18	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		18-26		10YR 3/6		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
218	ST-1715	0-26	Sandy silt; sandy clay	10YR 3/3	Negative	Central portion of APE
		26-36		10YR 3/6		
		Base of Excavation				
219	ST-1716	0-30	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Eastern portion of APE
		30-43		10YR 4/4		
		Base of Excavation				
220	ST-1717	0-29	Sandy silt; sandy clay	10YR 3/3	Negative	Eastern portion of APE
		29-34		10YR 3/6		
		Base of Excavation				
221	ST-1719	0-29	Sandy loam; sand	10YR 4/2	Negative	10% gravel throughout
		29-37		10YR 4/4		
		Base of Excavation				
222	ST-1737	0-17	Sandy silt; sandy clay	10YR 3/3	Negative	Mottled and disturbed throughout
		17-29		10YR 3/6		
		Base of Excavation				
223	ST-1738	0-21	Silty clay loam; clay loam	10YR 4/2	Negative	Southwestern portion of the APE
		21-30		10YR 5/6		
		Base of Excavation				
224	ST-1739	0-25	Sandy silt; sandy clay	10YR 3/3	Negative	Southwestern portion of the APE
		25-38		10YR 3/6		
		Base of Excavation				
225	ST-1740	0-22	Sandy loam; sand	10YR 4/2	Negative	10% gravel throughout

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		22-35		10YR 4/4		
		Base of Excavation				
226	ST-1741	0-28	Sandy silt; sandy clay	10YR 3/3	Negative	Gravel throughout
		28-35		10YR 3/6		
		Base of Excavation				
227	ST-1742	0-28	Sandy loam; sand	10YR 4/2	Negative	Gravel throughout
		28-37		10YR 4/4		
		Base of Excavation				
228	ST-1743	0-20	Sandy silt; sandy clay	10YR 3/3	Negative	Southern portion of the APE
		20-28		10YR 3/6		
		Base of Excavation				
229	ST-1744	0-33	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		33-43		10YR 4/6		
		Base of Excavation				
231	ST-1745	0-27	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		27-40		10YR 4/6		
		Base of Excavation				
232	ST-1746	0-33	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		33-46		10YR 4/6		
		Base of Excavation				
233	ST-1747	0-29	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		29-40		10YR 4/6		
		Base of Excavation				

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
234	ST-1748	0-29	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		29-40		10YR 4/6		
		Base of Excavation				
235	ST-1749	0-30	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		30-40		10YR 4/6		
		Base of Excavation				
236	ST-1750	0-28	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		28-44		10YR 4/6		
		Base of Excavation				
237	ST-1751	0-26	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern portion of the APE
		26-37		10YR 4/6		
		Base of Excavation				
238	ST-1752	0-29	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southeastern portion of APE
		29-40		10YR 4/6		
		Base of Excavation				
239	ST-1753	0-27	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southeastern portion of APE
		27-40		10YR 4/6		
		Base of Excavation				
240	ST-1755	0-41	Sandy loam; sandy clay loam	10YR 3/1	Negative	Southeastern portion of APE
		41-50		10YR 3/3		
		Base of Excavation				
241	ST-1756	0-38	Sandy loam; sandy clay loam	10YR 3/3	Negative	
		38-50		10YR 4/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				Possible drainage area
242	ST-1758	0-27	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southeastern portion of APE
		27-36		10YR 4/6		
		Base of Excavation				
243	ST-1759	0-21	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southeastern portion of APE
		21-37		10YR 4/6		
		Base of Excavation				
244	ST-1761	0-30	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southeastern portion of APE
		30-40		10YR 4/6		
		Base of Excavation				
245	ST-1773	0-22	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Bank of Shell Rock River
		22-34		10YR 5/6		
		Base of Excavation				
246	ST-1774	0-21	Silty clay loam; sandy clay loam	10YR 4/2	Negative	Bank of Shell Rock River
		21-30		10YR 5/6		
		Base of Excavation				
247	ST-1775	0-27	Clay silt; sandy silt	10YR 3/3	Negative	Bank of Shell Rock River
		27-44		10YR 3/6		
		Base of Excavation				
248	ST-1776	0-30	Silty clay loam; sandy clay loam	10YR 3/3	Negative	Southern boundary of APE
		30-41		10YR 4/6		

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		Base of Excavation				
249	ST-1777	0-27	Clay silt loam; sandy silt	10YR 3/3	Negative	Southern boundary of APE
		27-41		10YR 3/6		
		Base of Excavation				
250	ST-1778	0-28	Clay silt loam; sandy silt	10YR 3/3	Negative	Southern boundary of APE
		28-40		10YR 3/6		
		Base of Excavation				
251	ST-1779	0-35	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern boundary of APE
		35-45		10YR 4/6		
		Base of Excavation				
252	ST-1780	0-32	Clay loam; silty clay loam	10YR 3/3	Negative	Southern boundary of APE
		32-46		10YR 3/6		
		Base of Excavation				
253	ST-1781	0-33	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern boundary of APE
		33-47		10YR 4/6		
		Base of Excavation				
254	ST-1782	0-32	Clay loam; silty clay loam	10YR 3/3	Negative	Southern boundary of APE
		32-46		10YR 3/6		
		Base of Excavation				
255	ST-1783	0-32	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern boundary of APE
		32-47		10YR 4/6		
		Base of Excavation				
256	ST-1784	0-32	Clay loam; silty clay loam	10YR 3/3	Negative	Southern boundary of APE

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Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		32-48		10YR 3/6		
		Base of Excavation				
256	ST-1784	0-27	Sandy loam; sandy clay loam	10YR 3/3	Negative	Southern boundary of APE
		27-34		10YR 4/6		
		Base of Excavation				
257	ST-1785	0-32	Clay loam; silty clay loam	10YR 3/3	Negative	Southern boundary of APE
		32-48		10YR 3/6		
		Base of Excavation				
258	ST-1786	0-24	Clay loam; silty clay loam	10YR 3/3	Negative	Southern boundary of APE, potentially disturbed
		24-35		10YR 3/6		
		Base of Excavation				
259	ST-1787	0-30	Clay loam; silt clay loam	10YR 3/3	Negative	Distinct break in plow zone
		30-40		10YR 4/6		
		Base of Excavation				
260	ST-1788	0-30	Clay loam; silt clay loam	10YR 3/3	Negative	Southeastern boundary
		30-40		10YR 4/6		
		Base of Excavation				
261	ST-1790	0-24	Sandy clay loam	10YR 3/3 (10YR 4/6)	Negative	Heavily disturbed – 60% gravel throughout, layers mottled
		Base of Excavation				
262	ST-1792	0-34	Silty clay loam; sandy clay loam	10YR 3/3	Negative	

Shovel Test #	Field Assigned #	Depth (cmbs)	Soil Description	Soil Color	Results	Comments
		34-41		10YR 4/6		
		Base of Excavation				Appears disturbed
263	ST-1793	0-28	Silty clay loam; sandy clay loam	10YR 3/3	Negative	Appears disturbed
		28-39		10YR 4/6		
		Base of Excavation				
264	ST-1795	0-32	Silty clay loam; sandy clay loam	10YR 3/3	Negative	Southeastern boundary, in plow zone
		32-50		10YR 4/6		
		Base of Excavation				

Westwood

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August 28, 2024

State Historic Preservation Office
203 Administration Building
50 Sherburne Ave
St. Paul, MN 55155

Re: Phase I Archaeological Survey for the Proposed Midwater Energy Storage Project, Freeborn County, Minnesota
File R0046089.00

Attached with this letter is the report for the Phase I Archaeological Survey of the Proposed Midwater Energy Storage Project, Freeborn County, Minnesota. This survey was conducted on behalf of Midwater BESS, LLC to describe the effects of the Project on archaeological resources for the proposed Midwater Battery Energy Storage System (BESS). The request for review is being submitted electronically on August 28, 2024.

The Project is located on approximately 16 acres in Shell Rock Township in Sections 7, 8, and 17 of Township 101 N, Range 20 W, Freeborn County, Minnesota. Mapping of the survey area is provided in the report. The proposed BESS Project includes battery storage containers, substation connections, an overhead tap line to an existing substation, access roads, fencing, and underground electrical connections within the storage system. The survey was conducted to comply with anticipated requirements of the Minnesota Public Utilities Commission as part of the Site Permit Application process.

The attached report details the field methods and results of the archaeological investigations. Survey was performed on the 16 acres in June 2024. No archaeological sites were identified. Additionally, no NRHP or State-listed historic structures are located in the Project area or a one-mile buffer.

Please contact me at 701-425-9523 or rigden.glaab@westwoodps.com if you have any questions.

Sincerely,

WESTWOOD PROFESSIONAL SERVICES

Rigden Glaab

Rigden Glaab, MA, RPA
Principal Investigator