APPENDIX A – GROUNDWATER WELL LOGS

Minnesota Unique Well Number

1000004028

County Fillmore
Quad Bratsberg
Quad ID 4A

MINNESOTA DEPARTMENT OF HEALTH

WELL AND BORING REPORT

Minnesota Statutes Chapter 1031

Entry Date 03/08/1993
Update Date 08/18/2016
Received Date

Well Name	Township	Range	Dir	Section	Subsection
LARSON,DAVID	102	8	W	3	DABDCB

Elevation 795 ft. **Elev. Method** 7.5 minute topographic map (+/- 5 feet)

Address

Well 43948 COUNTY 13 CR MABEL MN 55954
Contact 21013 STATE HWY 43 SH MABEL MN 55954

Stratigraphy Information

Remarks

Well Depth 80 ft. **Depth Completed** 80 ft. **Date Well Completed** 00/00/1940

Drill Method **Drill Fluid**

Use domestic **Status** Active

Well Hydrofractured? Yes ☐ No ☐ **From** **To**

Casing Type **Joint**
Drive Shoe? Yes ☐ No ☐ **Above/Below**

Casing Diameter	Weight
4 in. To ft.	lbs./ft.

Open Hole From ft. To ft.

Screen? ☐ **Type** **Make**

Static Water Level

Pumping Level (below land surface)

Wellhead Completion
Pitless adapter manufacturer Model
☐ Casing Protection ☐ 12 in. above grade
☐ At-grade (Environmental Wells and Borings ONLY)

Grouting Information Well Grouted? ☐ Yes ☐ No ☒ Not Specified

Nearest Known Source of Contamination
60 feet Southeas Direction Septic tank/drain field Type
Well disinfected upon completion? ☐ Yes ☐ No

Pump ☐ Not Installed Date Installed
Manufacturer's name
Model Number HP Volt
Length of drop pipe ft Capacity g.p. Typ

Abandoned
Does property have any not in use and not sealed well(s)? ☐ Yes ☐ No

Variance
Was a variance granted from the MDH for this well? ☐ Yes ☐ No

Miscellaneous
First Bedrock Aquifer Tunnel CIty/Lone
Last Strat Depth to Bedrock ft
Located by Fillmore Cty.
Locate Method GPS SA Off (averaged) (15 meters)
System UTM - NAD83, Zone 15, Meters X 598896 Y 4835415
Unique Number Verification Information from Input Date 12/07/2007

Angled Drill Hole

Well Contractor

Licensee Business Lic. or Reg. No. Name of Driller

APPENDIX B – MINNESOTA CONSERVATION EXPLORER NATURAL HERITAGE INFORMATION SYSTEM REVIEW

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

December 12, 2023
Correspondence # MCE 2023-00687

Mike Majeski
Emmons & Olivier Resources, Inc.

RE: Natural Heritage Review of the proposed Maple Creek Stream Enhancement,
T102N R8W Sections 3-4; Fillmore County

Dear Mike Majeski,

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas

- The Minnesota Biological Survey (MBS) has identified a Site of *Moderate* Biodiversity Significance near the proposed project. Thes sites are largely on the forested slopes nearby but there is some overlap in the southwest part of the proposed boundary. Sites of Biodiversity Significance have varying levels of native biodiversity and are ranked based on the relative significance of this biodiversity at a statewide level. Sites ranked as *Moderate* contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery. We encourage you to consider project alternatives that would avoid or minimize disturbance to this ecologically significant area. Actions to minimize disturbance may include, but are not limited to, the following recommendations:
    - Minimize vehicular disturbance in the MBS Site (allow only vehicles/equipment necessary for construction activities);
    - Do not park equipment or stockpile supplies in the MBS Site;
    - Do not place spoil in the MBS Site or other sensitive areas;
    - Retain a buffer between proposed activities and the MBS Site;
    - If possible, conduct the work under frozen ground conditions;

- Use effective erosion prevention and sediment control measures;
- Inspect and clean all equipment prior to bringing it to the Site to prevent the introduction and spread of invasive species;
- As much as possible, operate within already-disturbed areas;
- Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (*Lotus corniculatus*) and crown vetch (*Coronilla varia*), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

MBS Sites of Biodiversity Significance and DNR Native Plant Communities can be viewed using the Minnesota Conservation Explorer or their GIS shapefiles can be downloaded from the MN Geospatial Commons. Please contact the NH Review Team if you need assistance accessing the data. Reference the MBS Site Biodiversity Significance and Native Plant Community websites for information on interpreting the data.

State-listed Species

- Timber rattlesnake (*Crotalus horridus)*, a state-listed threatened species, have been reported from the vicinity of the proposed project and may be encountered on site. In Minnesota, the ideal habitat for this species is forested bluffs, south-facing rock outcrops, and bluff prairies, particularly in the Mississippi River Valley. Nearby forests, prairies, and agricultural lands are used as summer feeding grounds. Two necessary habitat components are open areas for thermoregulation, and dens for overwintering. The dens are often located on steep, south- or west-facing hillsides with rock outcroppings and ledges. Timber rattlesnakes emerge from their dens in late April to early May and return to them in late September to early October. In the spring and fall, timber rattlesnakes are active during the day; while during the hottest months of summer, they are mostly active at night.

  Timber rattlesnake mortality in Minnesota is most commonly caused by poaching, vehicle collisions, and habitat destruction. The loss of a single adult, especially a female, can impact the population significantly. Minnesota's Endangered Species Statute (Minnesota Statutes, section 84.0895) and associated Rules (Minnesota Rules, part 6212.1800 to 6212.2300 and 6134) prohibit the take of threatened or endangered species without a permit. As such, crews working in the area should be advised that if they encounter any snakes, the snakes should not be disturbed. Other precautions may include the following:

  - Wear appropriate personal protection equipment, such as thick pants, boots, and leather gloves.
  - Each day before starting work, check the site for snakes. Especially near metal objects and rock piles. Existing riprap, culverts, and roadside rock outcrops can contain snakes.

- When stockpiling rock or metal objects on-site, try to avoid stockpiling in or adjacent to tall grass areas or letting them sit for weeks before they are used.
- Erosion and sediment control should be limited to wildlife friendly erosion control to avoid the inadvertent take of timber rattlesnakes.
- Hydro-mulch products should not contain any materials with synthetic (plastic) fiber additives, as the fibers can re-suspend and flow into waterbodies.

Report any sightings to Reports.NHIS@state.mn.us; please include date, observer, location, and photograph of the timber rattlesnake.

- The Natural Heritage Information System (NHIS) tracks bat roost trees and hibernacula plus some acoustic data, but this information is not exhaustive. Even if there are no bat records listed nearby, all seven of Minnesota's bats, including the federally endangered northern long-eared bat (*Myotis septentrionalis*), can be found throughout Minnesota. During the active season (approximately April-November) bats roost underneath bark, in cavities, or in crevices of both live and dead trees. Tree removal can negatively impact bats by destroying roosting habitat, especially during the pup rearing season when females are forming maternity roosting colonies and the pups cannot yet fly. To minimize these impacts, the DNR recommends that tree removal be avoided from June 1 through August 15.

- There are several rare plant records from near the proposed project area. The DNR is aware of a rare plant survey done by Midwest Natural Resources on September 20, 2023 in the proposed project area. This survey was reviewed by the DNR and the results of no rare species found was accepted. Thus, we have no concerns about possible impacts to rare species based on the project details provided.

- Please visit the DNR Rare Species Guide for more information on the habitat use of these species and recommended measures to avoid or minimize impacts.

Federally Protected Species

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance. Sufficient information should be provided so the DNR can determine whether a takings permit will be needed for any of the above protected species.

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

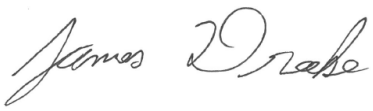
The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit the Natural Heritage Review website for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter and for your interest in preserving Minnesota's rare natural resources.

Sincerely,



James Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Cc: Melissa Collins

APPENDIX C – UNITED STATES FISH AND WILDLIFE SERVICE INFORMATION FOR PLANNING AND CONSULTATION RESOURCES LIST

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Fillmore County, Minnesota

Local office

Minnesota-Wisconsin Ecological Services Field Office

(952) 858-0793
(952) 646-2873

3815 American Blvd East

Bloomington, MN 55425-1659

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Birds

NAME	STATUS
Whooping Crane Grus americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/758	EXPN

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Managment https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Bald and Golden Eagle information is not available at this time

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid

cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory bird information is not available at this time

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the

locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

PEM1A

FRESHWATER FORESTED/SHRUB WETLAND

PFO1A

RIVERINE

R2UBG

R2USA

R2USC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX D – PHASE 1 ARCHEOLOGICAL AND CULTURAL RESOURCES REPORT

26 May 2023 MVAC SR 2023-62

Mike Majeski
EOR, Inc.
Ste 300
1919 University Avenue West
St Paul, MN 55104

From: Wendy Holtz-Leith, Mississippi Valley Archaeology Center (MVAC), University of Wisconsin-La Crosse
Principle Investigator: Constance Arzigian,

Re: Phase I Archaeological Survey for proposed trout stream habitat improvements on Maple Creek, Fillmore County, Minnesota.

License Number: 23-053

This letter summarizes a Phase I archaeological investigations along an approximately 3,300-foot stretch of streambank on Maple Creek, Fillmore County, Minnesota (Figure 1), for trout stream habitat improvements. The project area is located on land owned by the State of Minnesota and requires a license from the Office of the State Archaeologist, License No. 23-053. The work was completed for EOR, Inc. by Wendy K. Holtz-Leith, Senior Research Archaeologist, with Constance Arzigian, Principal Investigator and Senior Research Archaeologist, Mississippi Valley Archaeology Center (MVAC) at the University of Wisconsin-La Crosse.

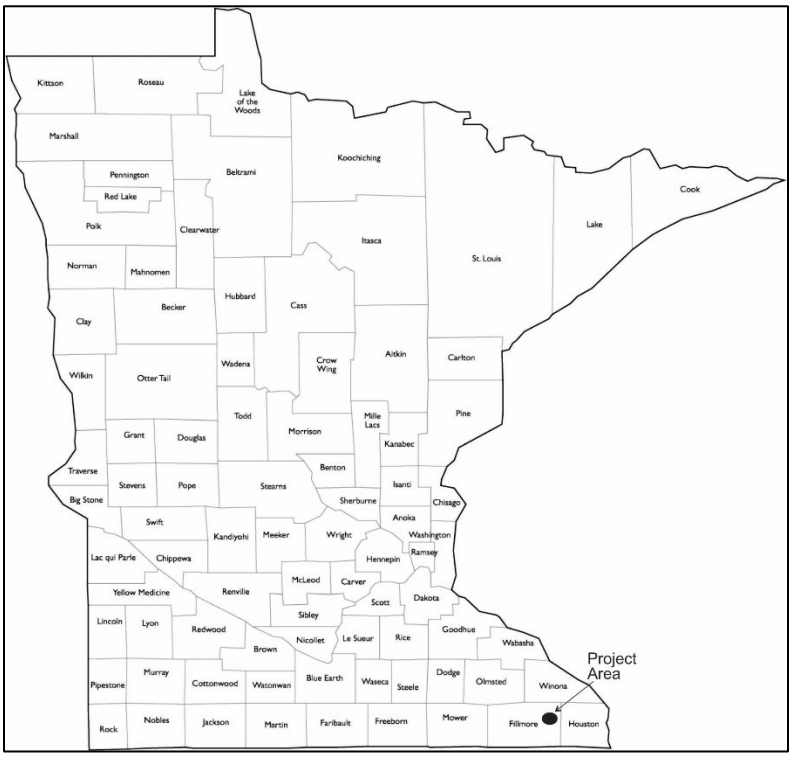


Figure 1. Project area within Minnesota.

Project description: The project area covers an approximately 3,300-foot stretch along Maple Creek. Field survey was conducted for proposed stream modifications to rehabilitate for trout stream habitats. The project area begins in the NE ¼ NE ¼ of Section 4 and ends in the NW ¼, NW ¼ of Section 3, T102N R08W, Preble Township (Figures 2 and 3). Maple Creek generally flows through the project area from the northwest to the southeast and drains into the South Fork of the Root River a little over a half mile from the south end of the project area. The north end of the project area starts near Highway 43 north of 216th Street and south of Peterson. The stream course has changed rather significantly from 1964, 1990, and 2011 to its current course today (Figures 4 and 5).

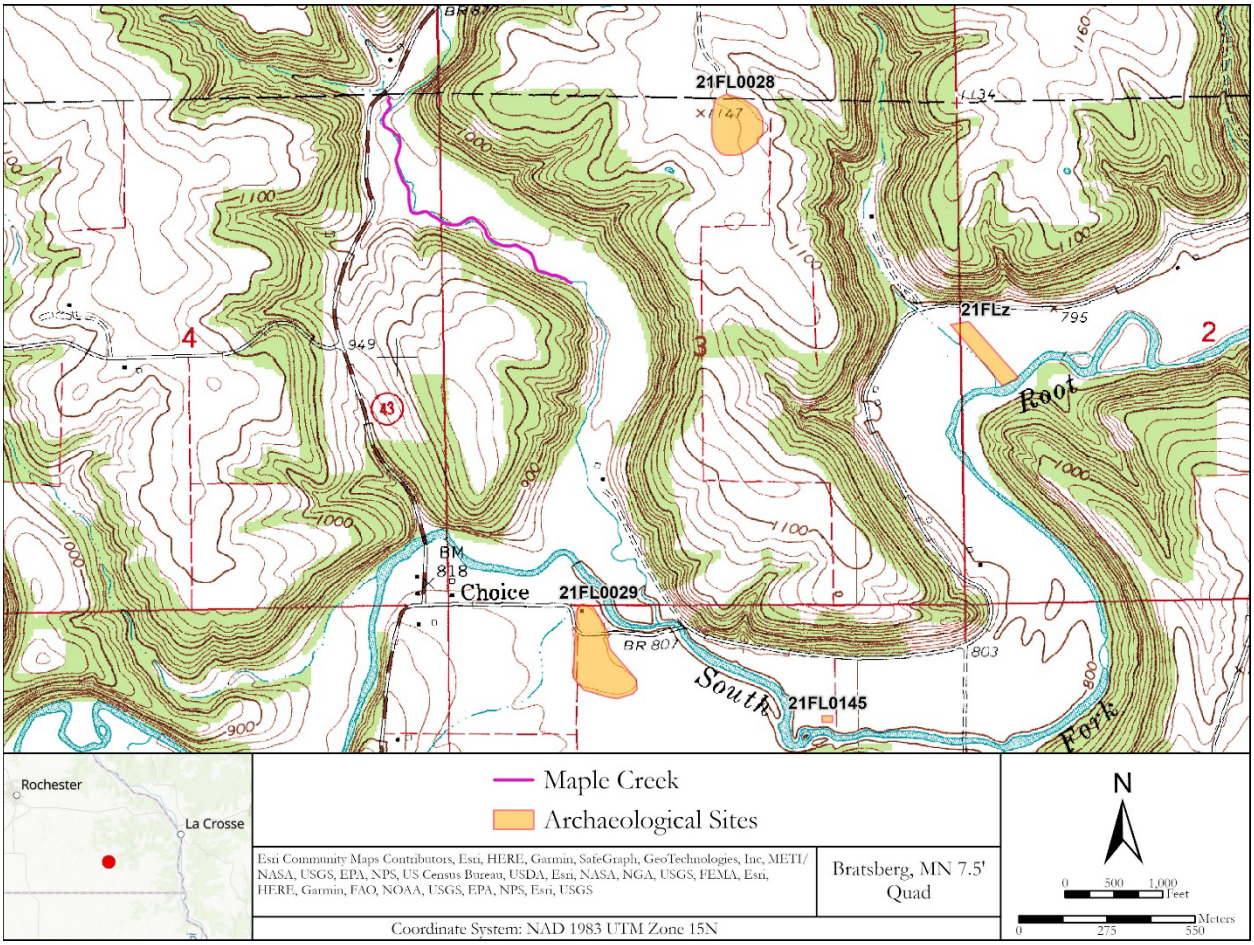


Figure 2. Project area and previously reported sites on the Bratsberg, Minnesota 7.5' Quadrangle (Generated in ArcGIS).

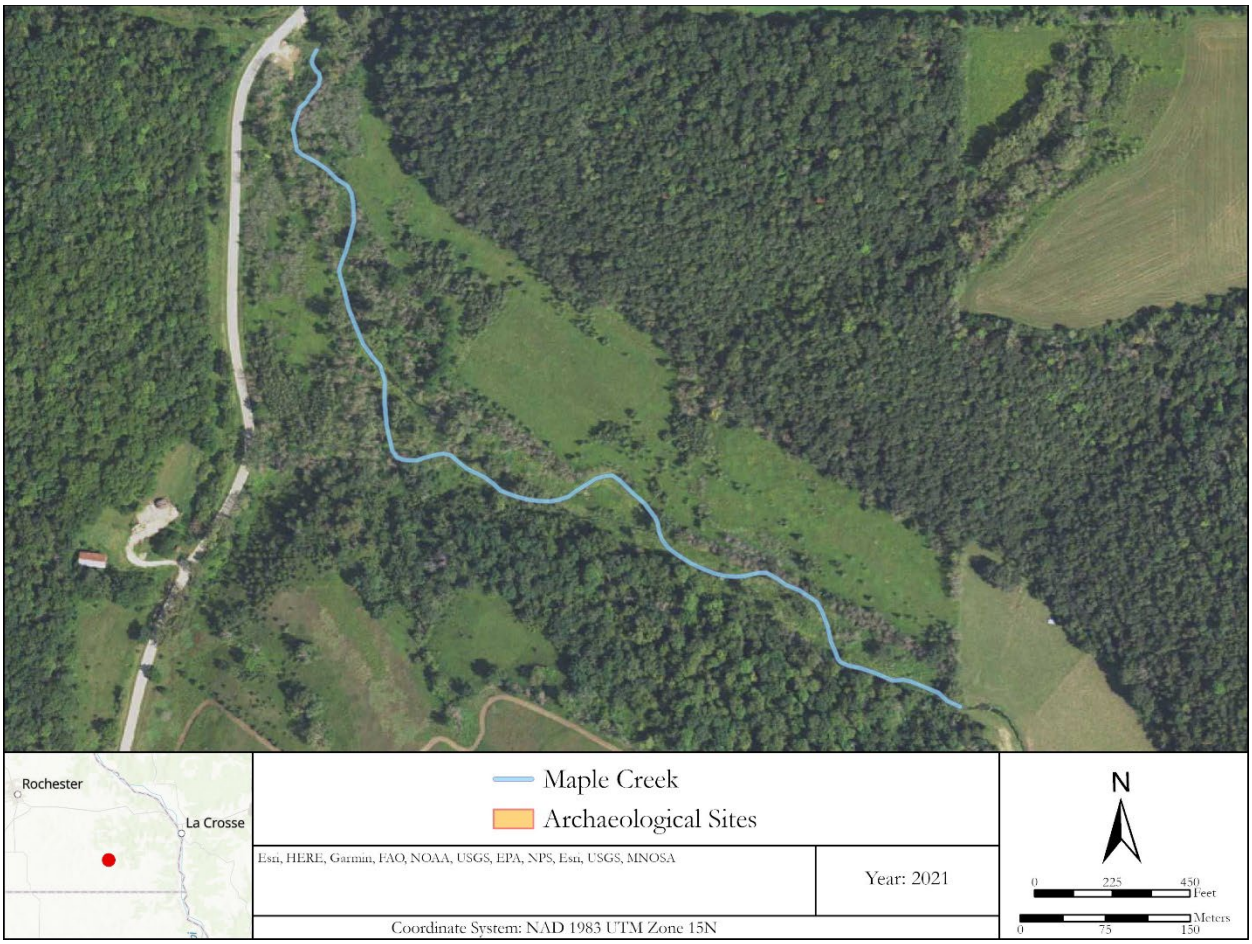
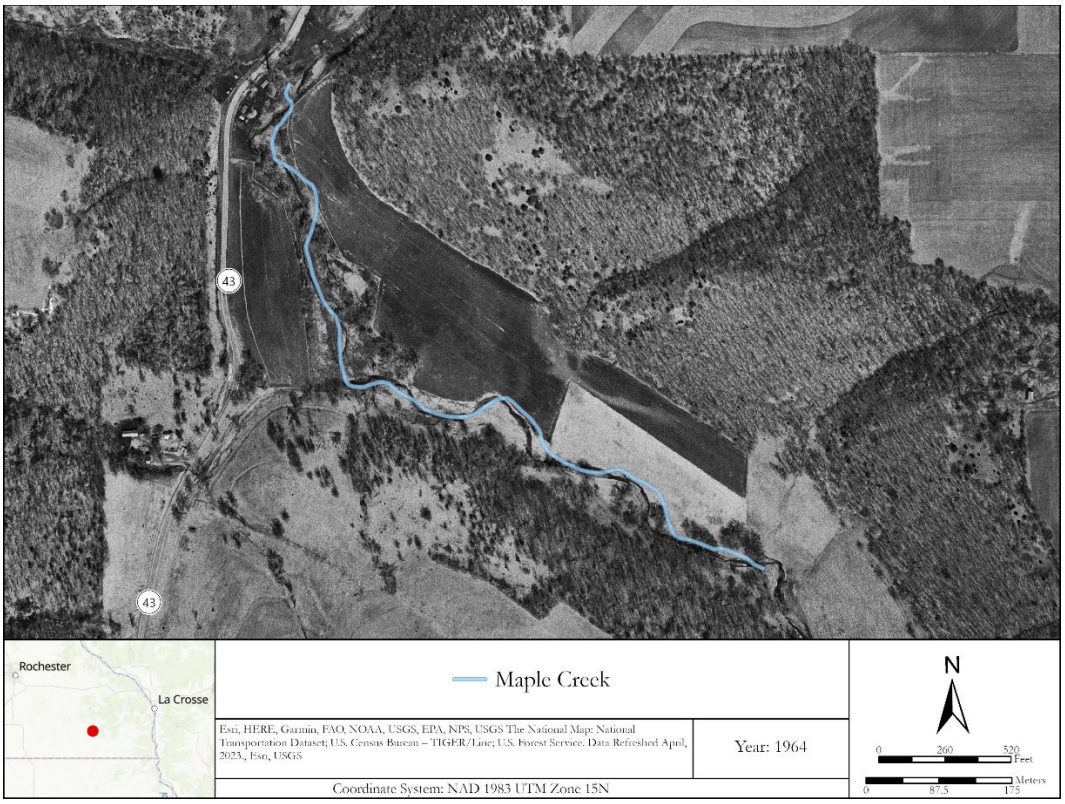


Figure 3. Maple Creek project area on aerial map (Generated in ArcGIS).



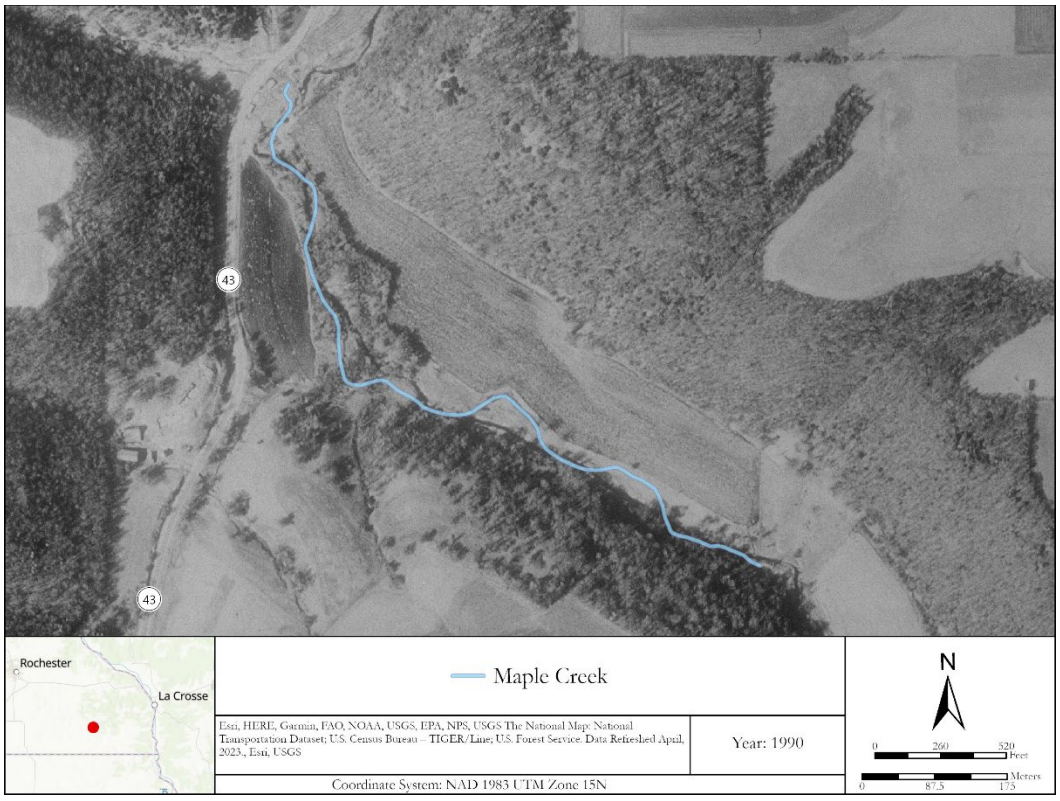
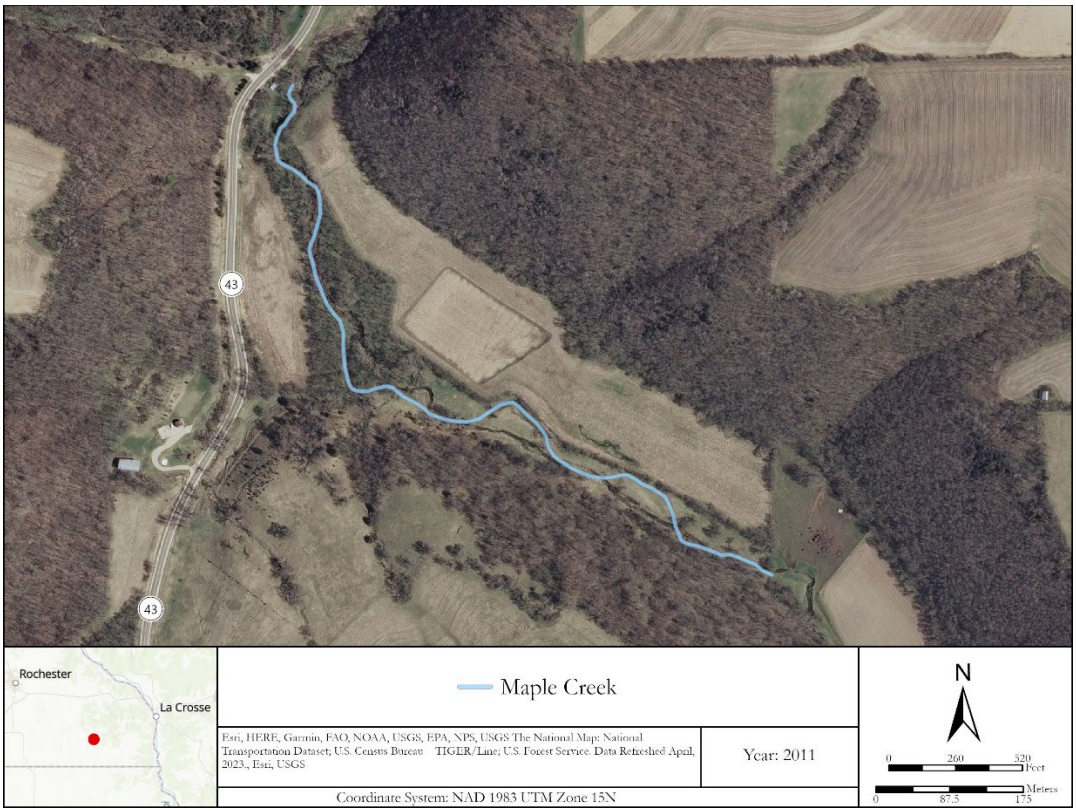


Figure 4. 1964 and 1990 aerial photos with project area (current location of Maple Creek) overlaid (University of Minnesota-Minnesota Historical Aerial Photographs Online).



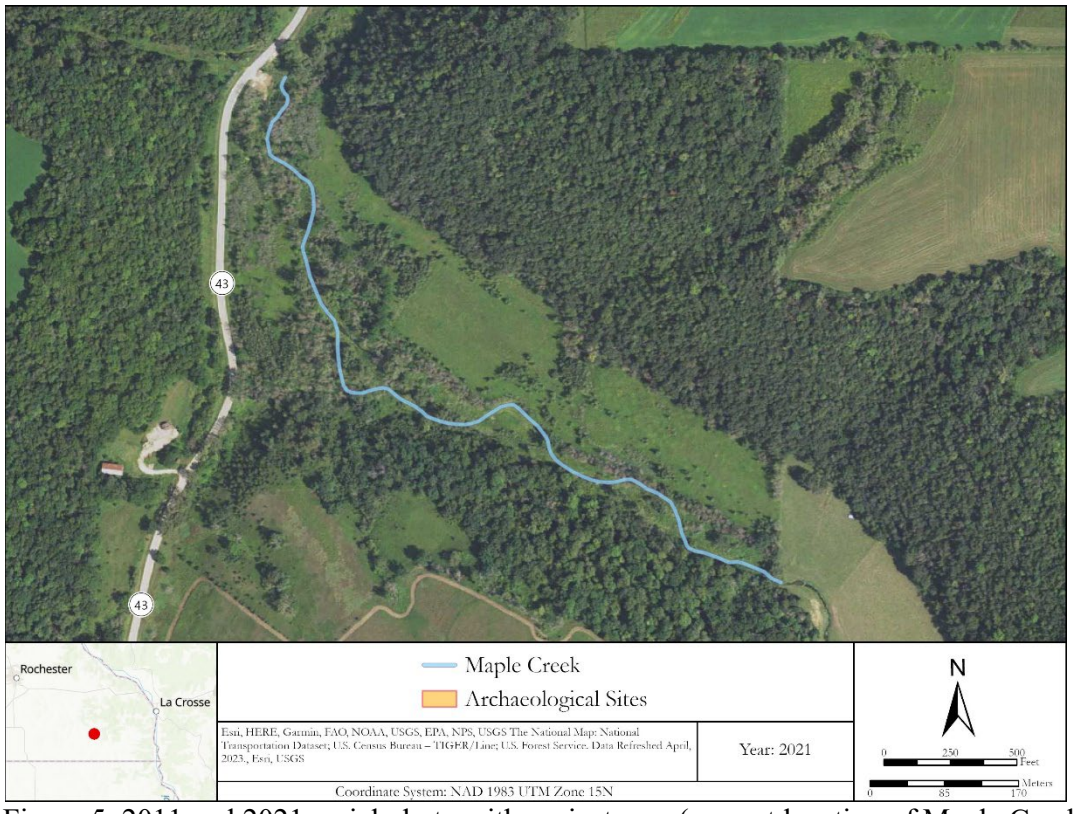


Figure 5. 2011 and 2021 aerial photo with project area (current location of Maple Creek) overlaid (University of Minnesota-Minnesota Historical Aerial Photographs Online).

Previously reported sites: A site search was requested from the State Historic Preservation Office and research was conducted using the Office of the State Archaeologist (OSA) Portal. There are five previously identified sites located within one mile of the project area.

21FL28, Clifford site, is a Woodland lithic scatter located on a hilltop located about 550 meters (1820 feet) northeast of the project area at its nearest point. In 1979 the landowner had a collection of a number of points that may be from the same site.

21FL29, Choice site, is a habitation village site of Archaic and Woodland affiliation located on a high terrace on the south side of the South Fork of the Root River about .6 miles south of the south end of the project area. In 1979 the area had been heavily collected and there were very few undisturbed areas.

21FL37, Walt site, is a small precontact habitation site of unknown age and cultural affiliation located on small rises in the floodplain of a small unnamed stream about a mile north of the north end of the project area.

21FLz is a possible mound site located adjacent to the creek bed. In 1974 Jerry Oothoudt presented MHS staff with information on the possible sites around Minnesota. He described this as a large mound visible from the county road down the hill on the stream terrace. He described the area as a flood terrace, symmetrical, and looks artificial. It is located about .7 miles east of the south end of the project area. MHS notes on the site indicate that the location of the possible mound would be unusual for a mound site and the drainage feature that crosses the floodplain in this area appears to have been artificially straightened and the mound may have been a dredge spoil pile that has subsequently been leveled.

21FL145 is a small lithic scatter of unknown precontact age or cultural affiliation. The site is located in a floodplain setting on the north side of the South Branch of the Root River. 9 miles southeast of the south end of the project area. The artifacts were found in shovel tests that showed a highly variable soil profile, suggesting a dynamic landscape with little potential for significant intact deposits.

Soils, vegetation and landscape change: The United States Department of Agriculture, Natural Resources Conservation Services Web Soil Survey (USDA-NRCS) was consulted to determine soils mapped within the project area (USDA-NRCS 2023). All of the project area is mapped as Alluvial land or mixed alluvial land (Figure 6). The north end of the project area is mapped as Alluvial land, medium textured, well drained. These soils are found on floodplains and are formed in loamy alluvium and are moderately well drained. The remainder of the project area is mapped as Mixed alluvial land, 0-6 percent slope. These soils are found on floodplains, they are deep, poorly drained and very poorly drained soils that formed in recent sandy and silty alluvial sediments and are frequently flooded and ponded. A small area along the west side of Maple Creek is mapped as alluvial land, medium texture. These soils are also found on floodplains but are well drained and occasionally flooded.

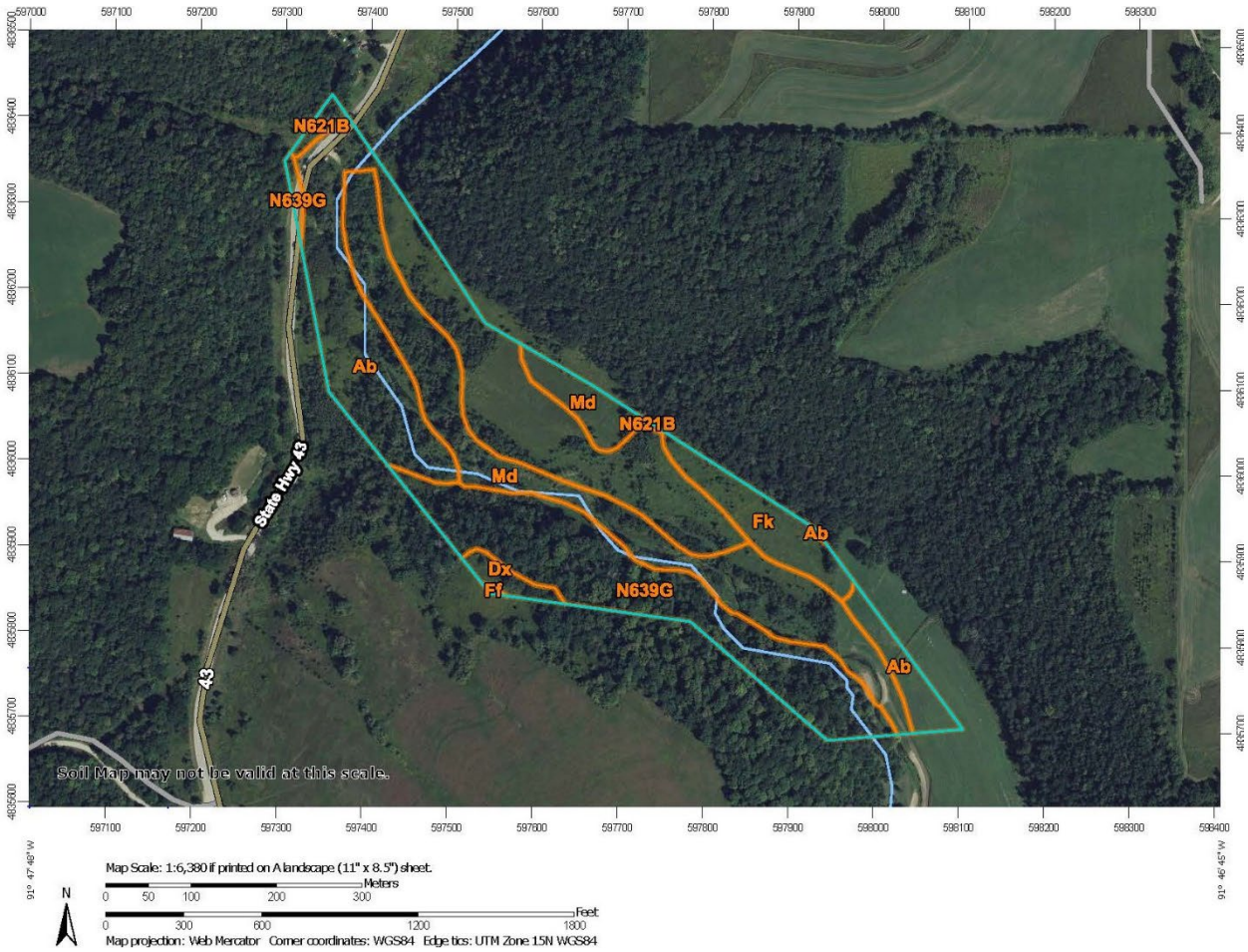


Figure 6. USDA-NRCS soils map of the project area.

Vegetation near the project area was noted in the 1853 Government Land Office surveys [(GLO) (GLO Historic Plat Map Retrieval System 2023]. Sections 3 and 4 of T102N, R08W was described as rolling, first-rate soils with timber of possibly black walnut (hard to read) and bur oak with undergrowth of hazel and oak bushes.

The OSA Portal identifies the project area as seasonally wet and prairie. Since the mid-nineteenth century, the region around the project area has seen intensive land clearing and agriculture. Prior to this period the uplands would have been predominantly short grass prairies with hardwoods in the narrow, often steep, stream valleys. More than 150 years of agriculture has eroded the uplands and deposited thick accumulations of fine-grained sediments in the valley margins. This post-settlement-alluvium (PSA) or legacy sediment as it is sometimes called, is ubiquitous in small stream valleys such as Maple Creek. The portal also has a survey implementation model that identifies the area as high site potential and has been poorly surveyed.

Field investigations: Field investigations were conducted on May 24, 2023, by the author, under the direction of Constance Arzigian, Principal Investigator. The project area is overall located in a wooded area owned by the State of Minnesota; the creek has grassy areas on either bank with few trees (Figure 7). The survey was conducted by walking along the either side of the creek bank, where it was feasible. There was good visibility for both banks through much of the project area. Exposed banks were

inspected for the presence of any cultural materials or evidence of a buried soil horizon and soil probes, or shovel tests were placed in areas without good exposure. Approximately 35 % of the banks were exposed, with visibility of the banks themselves being 50-100% (Figure 8). The exposed banks provided excellent visibility and discernibility, permitting the identification of any potential cultural materials or cultural horizons. In the historic air photos and in the field, there was evidence of past meanders including meander channels that are currently being cut off or are cut off from the main channel (Figure 9). Some of these areas are mapped as wetlands. In the central portion of the project area the creek is actively eroding the western bank towards the bluff, with evidence of the old stream bed next to the current location (Figure 10).

The cutbanks, soil probes, and shovel tests showed either deep profiles with no soil horizon development or episodes of fast deposition from flood events (Figure 11). The primary soil profile noted throughout the project area was a dark gray to grayish brown (10YR4/1-10YR4/2) silty loam, interpreted as PSA. The amount of PSA depended on the depth of the cut bank or soil probe and had no visible stratigraphy in profile. No intact soil horizons were noted in the project area.

Figure 7. General setting for much of the project area, view easterly.

Figure 8. Eroding cutbank on west side of channel.

Figure 9. Cut off meander scar with stagnant water.

Figure 10. Creek actively cutting into the west bank and old stream bed to the right side of photo, view north.

Figure 11. Example of cutbank soil profile.

Results: The Maple Creek project area is located in a fairly narrow stream valley. There is active erosion, with banks being undercut by the stream, providing excellent visibility for the survey. There are also areas of past and ongoing stream meandering. Aerial photos dating back to 1964 show the stream moving across the project area. The 1964 aerial seems to show the stream near its current location. By the 1990 aerial, and again on the 2011 aerial, it appears to have meandered south towards the edge of the valley. During the field investigations extensive accumulations of PSA were verified throughout the project area. Both the stream banks, soil probes, and shovel tests were inspected for cultural resources and/or potential non-PSA soil horizons and none were observed.

Recommendations: The entire project area is within historic alluvial deposits, PSA. There are no previously identified cultural resources within or near the project area and none were found during this survey. The only nearby previously reported sites are either located on higher terraces or hilltops or in one case in a setting similar to the project area that is interpreted as being a "dynamic landscape with little potential for significant intact deposits." Based on these findings there is very little chance that if cultural resources ever existed within the project area that they would remain intact. Consequently, it is recommended that the proposed trout habit improvements go ahead as planned.

However, it is always possible that deeply buried materials, including human remains, may be encountered during the course of construction. If human remains are discovered, all work must cease in that area immediately, and the Minnesota Office of State Archaeologist must be contacted promptly.

Please let me know if you have any questions or need clarification on this report.

Sincerely,

Wendy K. Holtz-Leith

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608-785-8455
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References cited:

GLO Historic Plat Map Retrieval System
2023 Digital Public Land Survey plat maps images. Accessed online May 2023. http://www.mngeo.state.mn.us/glo/

2023 Web Soil Survey. Accessed online May 2023 at https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

University of Minnesota
2023 Minnesota Historical Aerial Photographs. Accessed online May 2023 at https://www.lib.umn.edu/apps/mhapo/

APPENDIX E – STATE HISTORIC PRESERVATION OFFICE LETTER OF REVIEW

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

July 19, 2023

Mike Magner
DNR Forestry/ Fish & Wildlife Archaeologist
DNR Forestry Resource Assessment Office
483 Peterson Road
Grand Rapids, MN 55744

RE: Stream Habitat Improvements along Maple Creek
T102 R8 S3 & S4, Preble Twp, Fillmore County
SHPO Number: 2023-2154

Dear Mike Magner:

Thank you for the opportunity to review and comment on the above referenced project. It has been reviewed pursuant to the responsibilities given the State Historic Preservation Office by the Minnesota Historic Sites Act (Minn. Stat. 138.665-666) and the Minnesota Field Archaeology Act (Minn. Stat. 138.40).

We have reviewed the Phase I archaeological survey letter report: *Phase I Archaeological Survey for proposed trout stream habitat improvements on Maple Creek, Fillmore County, Minnesota* (May 26, 2023) as prepared by Mississippi Valley Archaeology Center. Based on the results of the survey, we conclude that there are **no properties** listed in the National or State Registers of Historic Places and no known or suspected archaeological properties in the area that will be affected by this project.

Please note that this comment letter does not address the requirements of Section 106 of the National Historic Preservation Act of 1966 and 36 CFR § 800. If this project is considered for federal financial assistance, or requires a federal permit or license, then review and consultation with our office will need to be initiated by the lead federal agency. Be advised that comments and recommendations provided by our office for this state-level review may differ from findings and determinations made by the federal agency as part of review and consultation under Section 106.

If you have any questions regarding our review of this project, please contact Kelly Gragg-Johnson, Environmental Review Program Specialist, at 651-201-3285 or kelly.graggjohnson@state.mn.us.

Sincerely,

Sarah J. Beimers
Environmental Review Program Manager