Appendix C.

Wetland Delineation and Correspondence

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Conservation Act
Notice of Application

Local Government Unit: City of Rochester	**County:** Olmsted
Applicant Name: Kurt Claussen	**Applicant Representative:** Matt Wagner
Project Name: Rochester (RST) Runway 2/20 Supplemental	**LGU Project No. (if any):** R2022-009WET
Date Complete Application Received by LGU: 7/21/2022	
Date this Notice was Sent by LGU: 9/28/2022	
Date that Comments on this Application Must Be Received By LGU[1]: 10/19/2022	

[1] *minimum 15 business day comment period for Boundary & Type, Sequencing, Replacement Plan and Bank Plan Applications*

WCA Decision Type - check all that apply

■ Wetland Boundary/Type ☐ Sequencing ☐ Replacement Plan ☐ Bank Plan (not credit purchase)
☐ No-Loss (8420.0415) ☐ Exemption (8420.0420)
Part: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H Subpart: ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

Replacement Plan Impacts (replacement plan decisions only)

Total WCA Impact Area Proposed: 0.080 Acres

Application Materials

■ Attached ☐ Other[1] (specify):

[1] Link to ftp or other accessible file sharing sites is acceptable.

Comments on this application should be sent to:

LGU Contact Person: Don VanKeulen
E-Mail Address: vankeulen.don@co.olmsted.mn.us
Address and Phone Number: 507-328-7118
Decision-Maker for this Application:
■ Staff ☐ Governing Board/Council ☐ Other (specify):

Notice Distribution (include name)

Required on all notices:

■ SWCD TEP Member: Skip Langer ■ BWSR TEP Member: Jed Chestnut
☐ LGU TEP Member (if different than LGU contact):
■ DNR Representative: Nicole Lehman
☐ Watershed District or Watershed Mgmt. Org.:
■ Applicant (notice only): ■ Agent/Consultant (notice only): Brauna Hartzell

Optional or As Applicable:

■ Corps of Engineers: David Studenski
☐ BWSR Wetland Mitigation Coordinator (required for bank plan applications only):
☐ Members of the Public (notice only): Troy Erickson & Linds ☐ Other:

Signature:	**Date:** 9/26/22

This notice and accompanying application materials may be sent electronically or by mail. The LGU may opt to send a summary of the application to members of the public upon request per 8420.0255, Subp. 3.

BOARD OF WATER AND SOIL RESOURCES

Minnesota Wetland Conservation Act
Notice of Decision

Local Government Unit: City of Rochester	**County:** Olmsted
Applicant Name: Kurt Claussen	**Applicant Representative:** Matt Wagner
Project Name: Rochester (RST) Runway 2/20 Supplemental	**LGU Project No. (if any):** R2022-009WET
Date Complete Application Received by LGU: 7/21/2022	
Date of LGU Decision: 11/23/2022	
Date this Notice was Sent: 11/23/2022	

WCA Decision Type - check all that apply

☒ Wetland Boundary/Type ☐ Sequencing ☐ Replacement Plan ☐ Bank Plan (not credit purchase)
☐ No-Loss (8420.0415) ☐ Exemption (8420.0420)
Part: ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H Subpart: ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9

Replacement Plan Impacts (replacement plan decisions only)

Total WCA Wetland Impact Area: N/A
Wetland Replacement Type: ☒ Project Specific Credits: ☐ Bank Credits:
Bank Account Number(s):

Technical Evaluation Panel Findings and Recommendations (attach if any)

☒ Approve ☐ Approve w/Conditions ☐ Deny ☐ No TEP Recommendation

LGU Decision

☒ Approved with Conditions (specify below)[1] ☐ Approved[1] ☐ Denied
List Conditions:

Decision-Maker for this Application: ☒ Staff ☐ Governing Board/Council ☐ Other:

Decision is valid for: ☒ 5 years (default) ☐ Other (specify):

[1] *Wetland Replacement Plan approval is not valid until BWSR confirms the withdrawal of any required wetland bank credits. For project-specific replacement a financial assurance per MN Rule 8420.0522, Subp. 9 and evidence that all required forms have been recorded on the title of the property on which the replacement wetland is located must be provided to the LGU for the approval to be valid.*

LGU Findings – Attach document(s) and/or insert narrative providing the basis for the LGU decision[1].

☒ Attachment(s) (specify): Notice of Application, Wetland report-Exhibit 4

☒ Summary: This NoD is for a duplicate applications R2022-007WET & R2022-009WET. These are a supplemental application to due to an expanded road improvement of 95th St SW. The TEP met on site June 1, 2022, the day the field delineation work was completed. It was determined that the construction of the gravel road caused the creation of the wetlands and the road ditch wetlands were incidental to the construction of the road a century ago. Wetland 1 which is in the SE corner of the corner of the Whole Runway improvement project. Page 75 of Exhibit 4 Wetland Delineation Report Supplemental. This was an incised channel with hydric soils and Hydrology with a total of 0.259 acres of wetland. There was no vegetation as the farmer had just tilled and seeded a corn crop.

[1] *Findings must consider any TEP recommendations.*

Attached Project Documents

☐ Site Location Map ☒ Project Plan(s)/Descriptions/Reports (specify):

Appeals of LGU Decisions

If you wish to appeal this decision, you must provide a written request within 30 calendar days of the date you received the notice. All appeals must be submitted to the Board of Water and Soil Resources Executive Director along with a check payable to BWSR for $500 *unless* the LGU has adopted a local appeal process as identified below. The check must be sent by mail and the written request to appeal can be submitted by mail or e-mail. The appeal should include a copy of this notice, name and contact information of appellant(s) and their representatives (if applicable), a statement clarifying the intent to appeal and supporting information as to why the decision is in error. Send to:

Appeals & Regulatory Compliance Coordinator
Minnesota Board of Water & Soils Resources
520 Lafayette Road North
St. Paul, MN 55155
travis.germundson@state.mn.us

Does the LGU have a local appeal process applicable to this decision?

☒ Yes[1] ☐ No

[1]*If yes, all appeals must first be considered via the local appeals process.*

Local Appeals Submittal Requirements (LGU must describe how to appeal, submittal requirements, fees, etc. as applicable)

Please refer to Rochester's CHAPTER 6-3. - WETLAND CONSERVATION Ordinance; Sec. 6-3-13. - Appeals

Notice Distribution (include name)

Required on all notices:

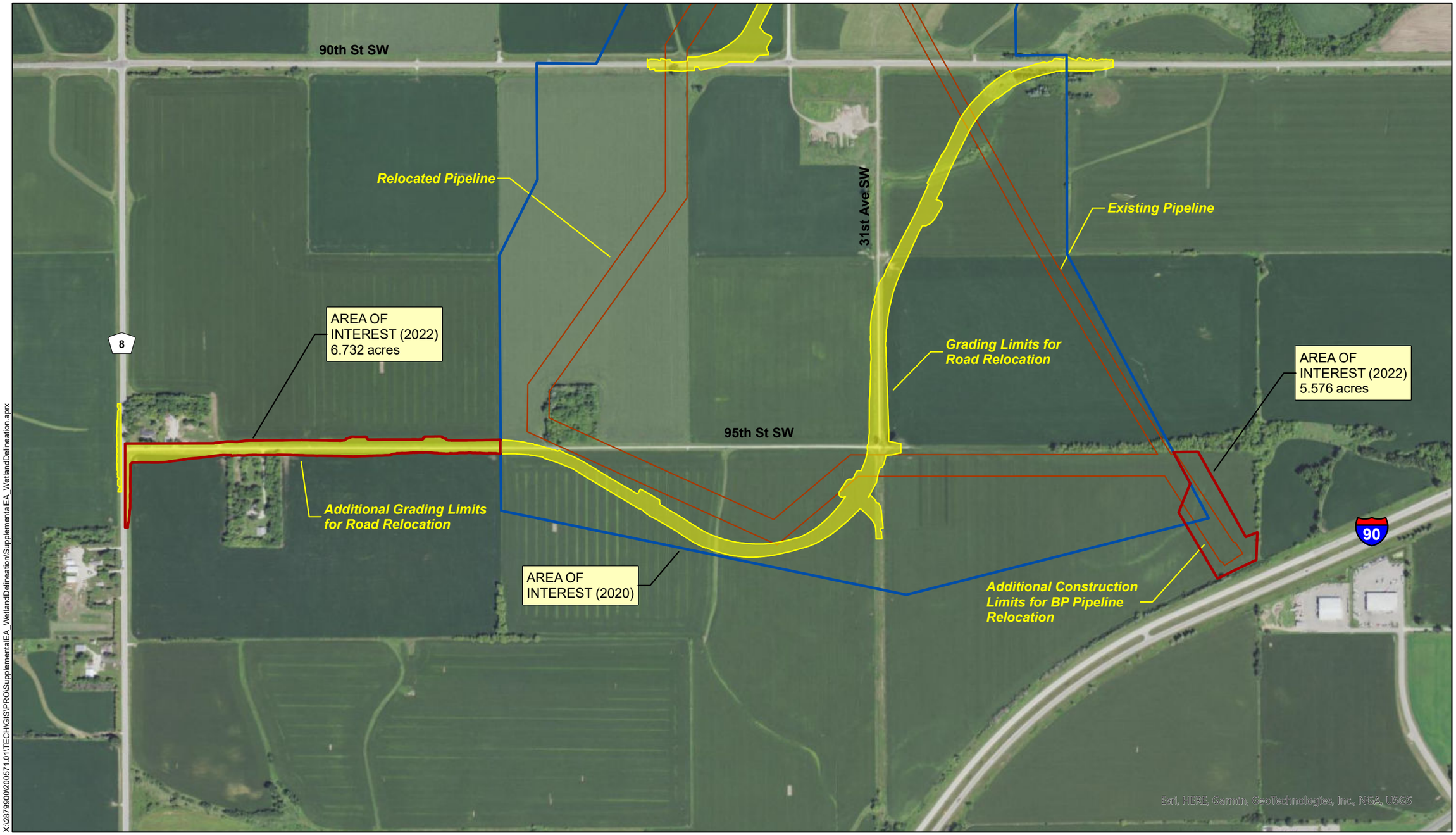
☒ SWCD TEP Member: Skip Langer	☒ BWSR TEP Member: Alyssa Core
☐ LGU TEP Member (if different than LGU contact):	
☒ DNR Representative: Nicole Lehman	
☐ Watershed District or Watershed Mgmt. Org.:	
☐ Applicant: Kurt Clauseen	☒ Agent/Consultant: Brauna Hartzell - Mead & Hunt

Optional or As Applicable:

☒ Corps of Engineers: David Studenski	
☐ BWSR Wetland Mitigation Coordinator (required for bank plan applications only):	
☒ Members of the Public (notice only): Troy Erickson	☒ Other:

Signature:	**Date:** 11/23/22

This notice and accompanying application materials may be sent electronically or by mail. The LGU may opt to send a summary of the application to members of the public upon request per 8420.0255, Subp. 3.



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PROJECT LOCATION MAP

ROCHESTER INTERNATIONAL AIRPORT

0 250 500 1,000 Feet

N

Legend

Project AOI Date

- 2020
- 2022

- BP Pipeline Relocation
- Road Grading Limits

DATA SOURCES

1. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

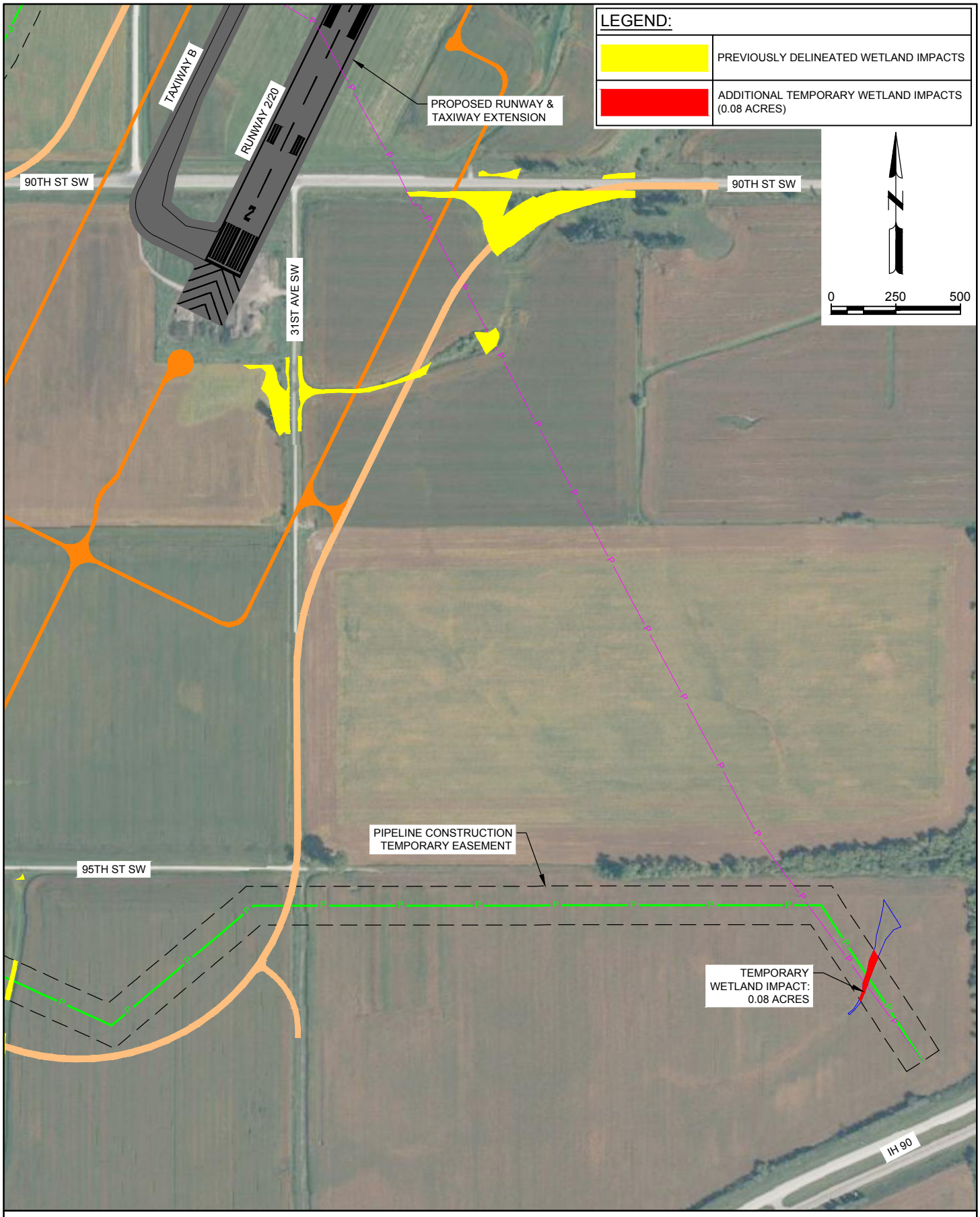
MAP NOTES

The 2020 Area of Interested covered previously delineated wetlands which were field reviewed in 2020 and 2021 as part of an Environmental Assessment for the Runway Reconstruction Project. These were determined non-jurisdictional by USACE and the State of Minnesota under WCA.

Additional areas outside of the original EA AOI were identified during design and comprise the 2022 AOI. These areas are being addressed under a Supplemental EA process.

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022



ROCHESTER INTERNATIONAL AIRPORT
RUNWAY 2/20 SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
2879900-191391.02
7/7/2022

EXHIBIT 2
ADDITIONAL TEMPORARY WETLAND IMPACTS

7/7/2022 5:12:09 PM
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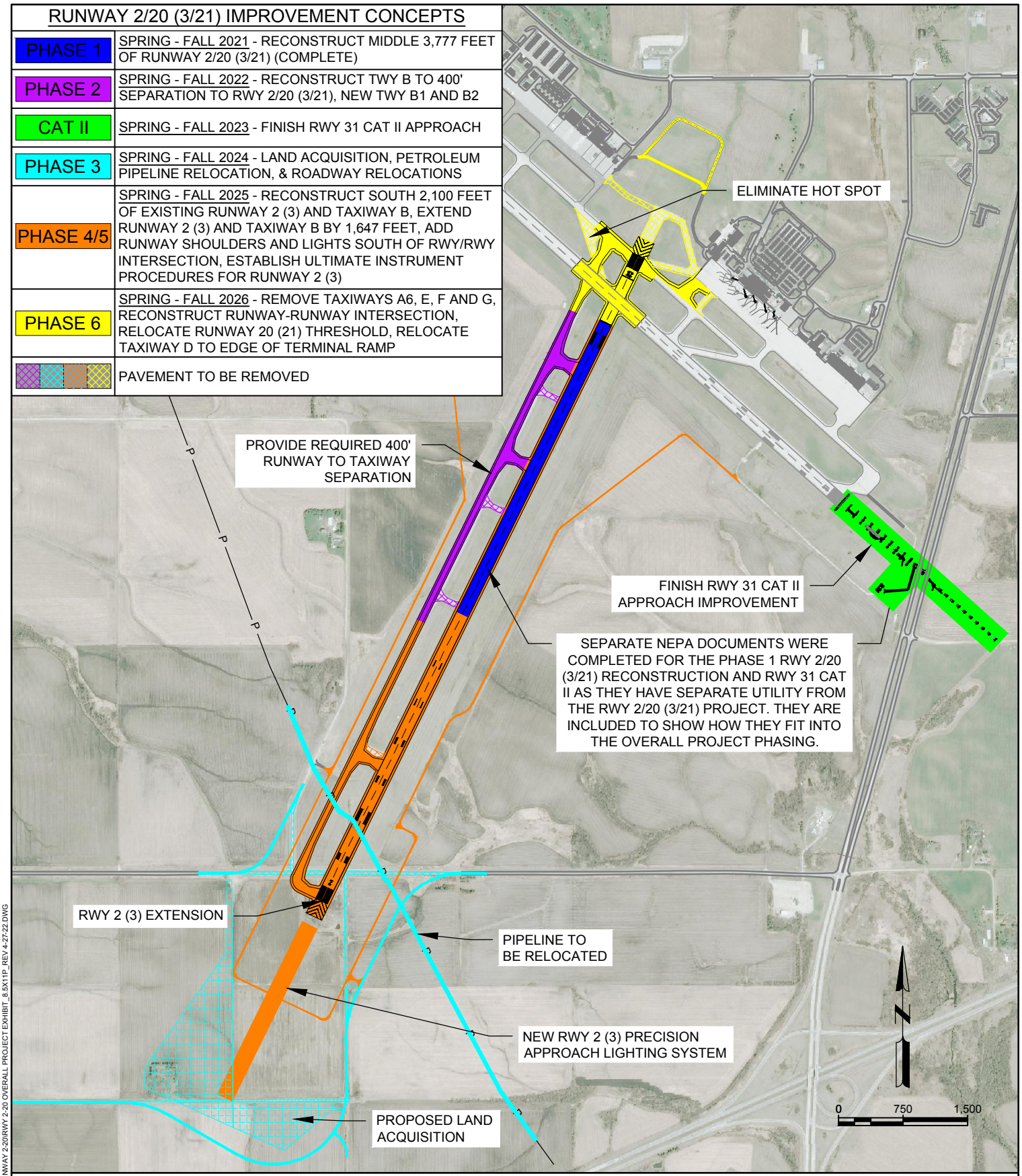


ROCHESTER INTERNATIONAL AIRPORT

RUNWAY 2/20 (3/21) IMPROVEMENTS - CONCEPT PLAN

JUNE 29, 2022

6/29/2022 10:46:45 AM
X:\28798001\170802.01\TECH\CAD\RUNWAY 2-20\RWY 2-20 OVERALL PROJECT EXHIBIT_8.5X11P_REV 4-27-22.DWG

Wetland Delineation Report

Rochester International Airport

Supplemental Environmental Assessment

Report prepared for

City of Rochester, Minnesota

Report prepared by

Mead & Hunt

www.meadhunt.com

July 2022

Table of Contents

Appendices

Tables

1. Introduction

Rochester International Airport (RST or Airport) is classified as a primary airport within the Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS) and serves air carrier, cargo operators, and general aviation. The Airport is operated by the Rochester Airport Company, a wholly owned subsidiary of Mayo Clinic - Rochester, Minnesota. The Airport is located approximately eight miles south of downtown Rochester within city limits on approximately 2,400 acres of land. The Airport is bordered by County Road 16 on the north, South Broadway (U.S. Highway 63) to the east, 90th Street (formerly State Road 30) on the south, and County Road 8 and 31st Avenue SW on the west.

Runway 2/20, having reached the end of its useful life, is showing areas of significant pavement distress. This, combined with the fact that Runway 2/20 does not meet current FAA design standards, necessitates reconstruction of the entire runway. The middle 3,750 ft of existing Runway 2/20 is planned for reconstruction starting in Spring 2021 and anticipated to be completed by Fall 2021. Once the middle section is reconstructed, the focus will turn to the remaining sections of Runway 2/20 for a multi-phased reconstruction that will need to be carefully considered, based on a variety of factors.

The FAA conducted an Environmental Assessment (EA) for the Runway 2/20 Project and issued a Finding of No Significant Impact/Record of Decision (FONSI/ROD) in July 2021. Since issuing the FONSI/ROD, the FAA has determined that the proposed action needs to be updated to include project components not explicitly considered by the 2021 EA. Project elements include proposed construction staging areas and field access areas, revision to land acquisition boundaries, relocation of utility lines, and additional tree clearing in uplands. Potential additional wetland impacts may be associated with the following project components:

- Proposed wider road easements (from 66' to 100'+) needed for 95th Street SW and 31st Ave. SW located north of 90th Street SW due to grading and stormwater requirements.

- Potential additional wetland impacts due to an adjusted southeast tie-in point for the relocated BP pipeline which extends beyond the project boundary identified in the 2021 EA.

The FAA initiated a process to complete a supplemental EA to analyze the affected environment, examine alternatives, and detail environmental consequences related to these additional project components not addressed in the 2021 EA.

In support of environmental documentation for this supplemental EA, a wetland delineation was conducted by Mead & Hunt, Inc. (Mead & Hunt) within an Area of Interest (AOI) on June 1, 2022. The AOI is comprised of two areas: one located in Section 20, Township 105, Range 14 West, along the western extent of the proposed 95th Street upgrade, and one located in Section 21, Township 105, Range 14 West, at the southeast tie-in point for the relocated BP pipeline. Together these two areas total approximately 12.3 acres.

This AOI is an extension to the 2021 Environmental Assessment Project Area of Interest for the proposed reconstruction of Runway 2/20. A wetland delineation was conducted June 1, 2022 and one wetland was

identified within the AOI. A Technical Evaluation Panel (TEP) meeting was conducted the day of the delineation (June 1, 2022). Present were Skip Langer, Olmsted County Soil and Water Conservation District (SWCD); Don Vankeulan, Olmsted County; Alyssa Core, Minnesota Board of Water and Soil Resources (BWSR); and Brauna Hartzell, Mead & Hunt.

This report summarizes the results of the wetland delineation and is an addendum to the previous Wetland Delineation report provided in support of the 2021 Environmental Assessment. Project location, topographic mapping, and aquatic resources mapping presented in the prior report apply to this report; maps, figures, and supporting documentation supplied in this report apply to the current Project Area of Interest. Mead & Hunt staff who performed the wetland delineation are:

- Brauna Hartzell, BS Biological Science, Florida State University, 1982; MS Environmental Monitoring, University of Wisconsin-Madison, 1994; 20 years wetland delineation practice.

2. Methods

The wetland determination made use of available resources to provide context and background information and to assist in the field assessment including:

- Olmsted County, MN Public Web Map. Accessed at https://gweb01.co.olmsted.mn.us/WebApps/OlmstedCountyGISMap/.
- Climate Data and Summary Reports from AgACIS, WETS Climate Tables for 1971-2010. Rochester International Airport. Data accessed at http://agacis.rcc-acis.org/.
- Minnesota Department of Natural Resources, Monthly Precipitation Data from Gridded Database. Accessed at https://climateapps.dnr.state.mn.us/mapClim2007/MNlocApp.asp.
- LiDAR Elevation Data for Minnesota, 2-foot contour data (2017). Accessed at https://www.mngeo.state.mn.us/chouse/elevation/lidar.html.
- U.S. Fish and Wildlife National Wetland Inventory (NWI) mapping. Accessed at https://www.fws.gov/wetlands/data/mapper.html.
- 2020 National Wetland Plant List (U.S. Army Corps of Engineers 2020, National Wetland Plant List, version 3.5).
- *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils*, Version 8.2, 2018.
- U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey. Accessed at Web Soil Survey at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.
- Aerial photography (USDA-FSA National Agriculture Imagery Program (NAIP) and Google Earth).
- Historic Aerial photography available from the Minnesota Geospatial WMS Image Service. Accessed at imageserver.gisdata.mn.gov.

The field methods used conform to the Routine Onsite Method of the *1987 U.S. Army Corps of Engineers' (USACE) Wetland Delineation Manual*, as enhanced by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (Version 2.0) (U.S. Army Corps of Engineers, 2010). Soil characteristics were examined by digging pits with a 16-inch tile spade and in cases where thick A horizons were encountered, an Eijkelkamp Edelman soil auger for combination soils with a 3-inch diameter by 6-inch-long barrel was employed to sample at depth. This soil auger was used to periodically test soils on both the upland and wetland sides of the boundary line. Soil pits were left open for a minimum of 15 minutes to adequately assess the water table. Munsell Soil Color charts were used to determine the hue, value, and chroma for the matrix and any redoximorphic features in each soil layer. Hydrologic indicators were visually assessed.

Vegetation was documented on Midwest Regional automated data forms provided by USACE. Percent cover of each species in each stratum was estimated. The herbaceous stratum was sampled within a 5-foot radius plot; a 15-foot radius plot for the shrub/sapling stratum; and a 30-foot radius plot for the tree and woody vine stratum. The 2020 National Wetland Plant List (USACE, 2020) was used to determine the wetland indicator status for each species and the 50/20 rule was applied to determine dominance.

Antecedent precipitation was assessed following procedures developed by the NRCS. Precipitation data three months prior to fieldwork was compared to 40-year precipitation averages (1971-2010) to determine if hydrologic conditions were normal, wetter, or drier than normal for the area.

All area within the AOI was examined. A total of four data points— three in uplands and one in wetlands—were established to characterize the range of soil, vegetation, and hydrologic conditions. Wetland boundary points were indicated by wire pin flags placed approximately 25-50 feet apart. These sampling points and wetland boundary flags were surveyed with a Trimble R1 GPS receiver capable of sub-meter accuracy and mapped using Geographic Information System (GIS) software. Wire pin flags set in agricultural areas were removed after survey so that farming operations would not be impacted.

The following appendices are included with this report:

- Appendix A – Project Location Map
- Appendix B – NRCS Soils Mapping
- Appendix C – Aquatic Resources
- Appendix D – WETS Analysis and Climatic Normals
- Appendix E - Historic Aerial Photo Review and Hydrological Analysis
- Appendix F – Wetland Boundary Maps with Topography
- Appendix G – Data Sheets
- Appendix H – Field Photographs
- Appendix I – Delineator Qualifications

3. Results and Discussion

A. Site Description

The AOI covers approximately 12.3 acres split into two areas: one centered along 95th Street (6.73 acres) near its terminus with CTH 8 and one located at the southeastern corner of the 2021 EA Project Area (5.58 acres). The Project Location Map in Appendix A shows the proposed additional grading limits along 95th Street which will be upgraded from a minimum maintenance road to a paved road with two 12-foot lanes. The second AOI area includes the southeastern tie-in point for the relocated BP pipeline.

The western end of 95th Street is centered on a topographic high at about 1,306 ft (NAVD 1988), along the watershed divide as the road bed slopes to the east to about 1,294 ft. Topography south of the existing minimum maintenance road slopes to the south as part of the Root River Watershed while the north side near the intersection with CTH 8 grades to the north within the Zumbro River Watershed.

Fields on the south side of 95th Street were recently disced and planted with corn. Along CTH 8, vegetation is regularly mown. To the east, the AOI crosses the northern extent of a residential property which contains mown turf grasses, a small section of woodland, and a small fenced pen for livestock. At the time of field investigation, adequate early season growth was present to make vegetation identifiable within this section of the AOI.

The eastern section of the AOI covers an agricultural field. It had recently been disced and no vegetation was present. Agricultural crops grown here are corn and soy beans as observed from previous investigations in this area.

(1) Soils Mapping

A majority of the AOI (70.6%) is covered by predominantly non-hydric or non-hydric soils from the Kasson, Waubeek, and Floyd series. Soils from the predominantly-hydric Garwin silty clay loam series cover a drainageway within the eastern portion of the AOI.

Soils mapped within the AOI are summarized in Table 1. Soils mapping and a soils component list for the AOI are presented in Appendix B.

Table 1. Summary of Soils in Area of Interest

Map unit symbol	Map unit name	Percent of AOI	Primary Landform	Hydric Rating (Percent)
24	Kasson silt loam, 1 to 4 percent slopes	35.6%	Hillslopes, Interfluves	Predominantly Non-hydric (5)
176	Garwin silty clay loam	12.7%	Drainageways	Predominantly Hydric (95)
369B	Waubeek silt loam, 1 to 6 percent slopes	28.3%	Till plains	Non-hydric (0)
479	Floyd silt loam, 1 to 4 percent slopes	6.7%	Drainageways, Interfluves	Predominantly Non-hydric (5)
M517A	Clyde silty clay loam, 0 to 3 percent slopes	16.6%	Drainageways, fens on Drainageways	Predominantly Hydric (95)

(2) Aquatic Resources

The National Wetland Inventory (NWI) shows no areas of mapped wetlands within or near the western AOI along 95th Street. An area of forested wetland is situated just north of the eastern section of the AOI along a drainageway that flows to the east.

No mapped FEMA floodplains are in or near the AOI. Appendix C presents NWI Circular 39 and MN Public Waters mapping and shows the Root River-Zumbro River watershed boundary.

(3) Previous Delineations

Two previous delineations pertinent to this project have been completed for the Runway 2/20 Reconstruction project at the Airport. The first, completed in 2020 (Mead & Hunt, 2020), supported the 2021 Environmental Assessment in which 38 wetlands were delineated in the larger project area. The intersection of CTH 8 and 95th Street was surveyed for wetlands in May 2021 and reported by Mead & Hunt (2021). Two ditch wetlands along CTH 8 were delineated in this effort.

Previously delineated wetland mapping is presented for reference to the current delineation on wetland boundary maps provided in this report.

(4) Antecedent Climatic Conditions

An assessment of antecedent climatic conditions was made using precipitation data for the three months prior to the site visit. This analysis indicated that climatic conditions were wetter than normal range for the June field visit (see Appendix D). Trace amounts of precipitation fell in the three days prior to the site visit.

(5) Historic Aerial Photo and Hydrology Review

Mead & Hunt reviewed historic aerial photographs for the AOI covering the years 1991, 2003, 2004, 2006, 2008, 2009, 2010, 2011, 2013, 2015, 2017, 2019, 2020, and 2021. In addition, two images taken prior to the Airport's construction are also provided. These date from 1940 and 1953. Aerial photography was accessed from the MnGEO WMS Imagery service and USDA NAIP photography program, and are presented in Appendix E.

As the eastern AOI is in agricultural production, an off-site review of available data sources including historic aerial photographs, soils mapping, and NWI wetland mapping was performed to identify areas of farmed wetland. This analysis aided in identifying specific wet areas within the farmed field to inspect which otherwise may be obscured or not present at the time of field work.

Following the procedures provided in *Guidance for Offsite Hydrology/Wetland Determinations* (USACE, 2016), two areas were identified and examined for wet signatures including crop stress or no cropping, soil wetness signatures, and normal vegetative cover. Fifteen aerial photos were used to assess these areas. Additional data sources including NRCS soils mapping and the National Wetland Inventory provided corroboratory information about each area.

(6) Atypical Conditions Analysis

Situated along CTH 8 and along an unpaved minimum maintenance road, the western AOI has likely seen disturbance due to road construction along both the unpaved road and the County highway. Ditches along both roads are periodically mowed and residential parcels mow along the roads more regularly. Farm fields adjacent to or within both sections of the AOI have been in agricultural production for decades. Area within the AOI has experienced some or all of the following disturbances:

- Grading, filling, mixing, transportation, and compaction of native soils.
- Introduction of cool-season turf grasses.
- Changes to topography and drainage patterns.
- Regular mowing along roadsides.
- Regular plowing, tilling, and harvesting which has increased soil compaction and led to disturbance to soil surface layers within farm fields.
- Potential alteration of drainage patterns and hydrological function due to tiling in the eastern farm field.

In farmed areas, normal circumstances were not considered to be present due to the recent discing within the eastern field. No vegetation was observed in this area. Along roadsides, vegetative growth was sufficient to make plant identification reliable.

B. Findings

(1) Level 1 Review

Both areas identified from the off-site review were field verified during field work. The results of this analysis are presented in Appendix E. Table 2 summarizes the results of the off-site review and field investigations.

Table 2. Summary of Level 1 Historic Aerial Review and Hydrology Analysis

Investigation Area	Level 1 Review Summary*	Field Summary for each Investigation Area
Area L	**Wetland (W)**	Exhibited wetland characteristics and was field delineated as **Wetland 1**; See Photos 1-3 and 5 and Data sheets DP1 - DP3
Area M	Non-Wetland or PC (NW)	No vegetation or wet areas observed; upland topographic position

(2) Wetlands

One farmed wetland was delineated within the eastern AOI. This Type 1 (Seasonally Flooded Basin) wetland is discussed below. No new wetlands were delineated within the western AOI.

Wetland boundary maps with sampling point locations are presented in Appendix F followed by data sheets and field photographs in Appendices G and H, respectively. Topographic data and previously delineated wetland mapping are presented for reference to the current delineation

on wetland boundary maps provided in Appendix F. Table 3 summarizes the delineated wetland which is described in more detail below.

Table 3. Summary of Delineated Wetlands within the Area of Interest

Wetland ID	Cowardin Type	Circular 39 Type/Wetland community	Dominant vegetation	Total Area within AOI (Acres)	Total Area within AOI (sq. ft.)
1	PEM1	Type 1 (Seasonally Flooded Basin)	Vegetation undetermined; wetland vegetation assumed to be supported is similar to other nearby reference sites	0.259	11,298.238

(a) *Wetland 1*

Wetland 1 is a farmed wetland along a narrow drainageway that drains to the northeast. Within the AOI, the narrow drainageway broadens out to the east as the topography flattens. Underlying this drainageway wetland are soils from the predominantly hydric Garwin silty clay loam series. The Level 1 off-site review of historic photos and hydrology analysis supported the presence of wetland hydrology where 78% of photos with normal antecedent precipitation conditions showed evidence of wet signatures. It is unknown whether the field is tiled but likely it is, given general knowledge of agricultural practices used in the area.

Three data points along a transect were taken to document site conditions. A vegetation determination was not possible due to the recent discing of the field. Normal circumstances were not found on site. The boundary determination relied on Midwest Regional Supplement guidance on Difficult Wetland Situations (USACE, 2010: Chapter 5). The closest wetland reference area was the wooded swamp to the north whose hydrology, plant community, and landscape position were dissimilar to the delineated wetland. This wooded wetland is a drainageway ditch adjacent to an abandoned road. Other farmed wetland areas or swales found within the general vicinity from previous wetland delineations supported chufa (*Cyperus esculentus*: FACW), fall panic grass (*Panicum dichotomiflorum*: FACW), barnyard grass (*Echinochloa crus-galli*: FACW), yellow bristle grass (*Setaria pumila*: FAC), and pinkweed (*Persicaria pensylvanica*: FACW).

Hydric soils meeting hydric soils indicators Depleted Below Dark Surface (A11) and/or Thick Dark Surface (A12) or both were satisfied at all three sampling points taken across the swale. No primary wetland hydrology indicators were satisfied. Wetland sampling point (DP1) taken within the swale met secondary wetland hydrology indicators Geomorphic Position (D2) and Saturation Visible on Aerial Imagery (C9). Upland sampling points (DP2 and DP3), taken at midslope on either side of the swale profile were approximately 1 foot higher in elevation than DP1. Secondary wetland hydrology indicators Geomorphic Position (D2) and Saturation Visible on Aerial Imagery (C9) were not satisfied at these sampling points.

The boundary determination was made based on topography changes along the drainageway and the review of historic aerial photos which indicated a consistent width and vegetative pattern along the swale.

C. Uplands

Vegetation along the fence line at the southern end of the farm field in the eastern portion of the AOI was dominated by smooth brome (*Bromus inermis*: FACU), honeysuckle (*Lonicera x bella*: FACU), and Siberian pea shrub (*Caragana arborscens*: UPL). Other species observed included burdock (*Arctium minus*: FACU), dandelion (*Taraxacum officinale*: FACU), blackberry (*Rubus occidentalis*: UPL), and wild black currant (*Ribes americanum*: FACW).

Uplands within the western AOI consisted primarily of farm fields and a residential area on the south side of the AOI. During previous site visits, roadside ditches were delineated and the locations of these are shown on Wetland Boundary Maps provided in Appendix F. Site photographs are provided in Appendix H.

The grading limits for the proposed upgraded 95th Street extended the AOI approximately 10-15 feet outside of the previous project AOI. The farm field at the intersection of CTH 8 and 95th Street was recently disced and planted to corn which had emerged and was at second-leaf stage. Vegetation along the edge of the farm field consisted of smooth brome, Canada thistle (*Cirsium arvense*: FACU), wild strawberry (*Fragaria virginiana*: FACU), and dandelion.

The residential property on the south side of the road within the AOI was examined for wetlands. Ditches provide drainage along the road. The residential property contains sections of mown turf grasses, a small woodlot, and a small fenced pen for livestock. The edge of the fenced area was dominated by smooth brome and honeysuckle. The areas of mown turf grasses on either side of the residential driveway contained white clover (*Trifolium repens*: FACU), dandelion, and ground ivy (*Glechoma hederacea*: FACU). The woodlot contained a mix of wetland trees and shrubs and was investigated for wetlands. Sampling point DP4 (Upland) found hydrophytic vegetation dominated by silver maple (*Acer saccharinum*: FACW), red osier (*Cornus alba*: FACW), blackberry, riverbank grape (*Vitis riparia*: FACW), and Virginia creeper (*Parthenocissus quinquefolia*: FACU). Hydric soils criteria were not satisfied and wetland hydrology was not present or indicated despite a water table found at 22 inches in depth and saturation present below 12 inches in depth.

D. Summary

In summary, the majority of the AOI is covered by non-hydric or predominantly non-hydric soils from the Kasson, Waubeek, and Floyd series with a significant component of the eastern AOI underlain by predominantly hydric Garwin silty clay loam along a drainageway within a farm field.

One wetland was identified within the eastern AOI under wetter than normal environmental conditions. No wetlands were identified in the western AOI. Three (3) sampling points document conditions within the wetland. Normal circumstances were determined not to be present due to recent discing of the farm field. No determination of hydrophytic vegetation could be made due to the absence of all vegetation. The wetland boundary was determined by the observation of hydric soils satisfying hydric soils indicators Depleted Below Dark Surface (A11) and Thick Dark Surface (A12) supported by a Level 1 Historic aerial photo and hydrologic review on farmed land. Topographic changes across the swale profile aided in the determination.

4. Conclusions

One wetland boundary enclosing 0.259 acres was delineated within the eastern AOI. A jurisdictional determination for this wetland will be needed from the U.S. Corps of Engineers (USACE) as it may be considered a jurisdictional water body. A Section 404 wetland fill permit from the USACE will be needed for any construction activities within jurisdictional wetland boundaries. A Section 401 water quality certification of the 404 permit will also be required by the Minnesota Pollution Control Agency, and additional permits may be required from the Local Government Unit (LGU) under the Minnesota Wetland Conservation Act. Independent review by the LGU may also be required. Final authority over the project rests with the above federal, state, and local agencies.

The wetland boundaries established by this work are valid only for the subject project and any use or interpretation of its findings for areas outside the project area of interest is not supported. The user of this wetland boundary report is advised that changing environmental conditions may affect the future validity of the wetland boundaries so established.

5. Certifications and Limitations

The undersigned does hereby certify and state that she is an employee of Mead & Hunt, Inc., that she has been designated as being in responsible charge of the delineation of wetlands described herein; and that this delineation was performed in accordance with the USACE *1987 Wetland Delineation Manual* as enhanced by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (U.S. Army Corps of Engineers, 2010).

This wetland delineation report documents vegetation, soils, and hydrology conditions on the above-referenced parcel according to these standard accepted practices, and the wetland boundary so established is valid only for the designated area. No uses or interpretations of wetland conditions or boundaries outside of the work area are supported by this work.

The mapped wetland boundaries are valid under the environmental conditions existing at the time of delineation. The user of this information is hereby notified that changing environmental conditions may affect the future validity of the wetland boundary.

MEAD & HUNT, Inc.

Brauna Hartzell
Wetland Ecologist & GIS Analyst

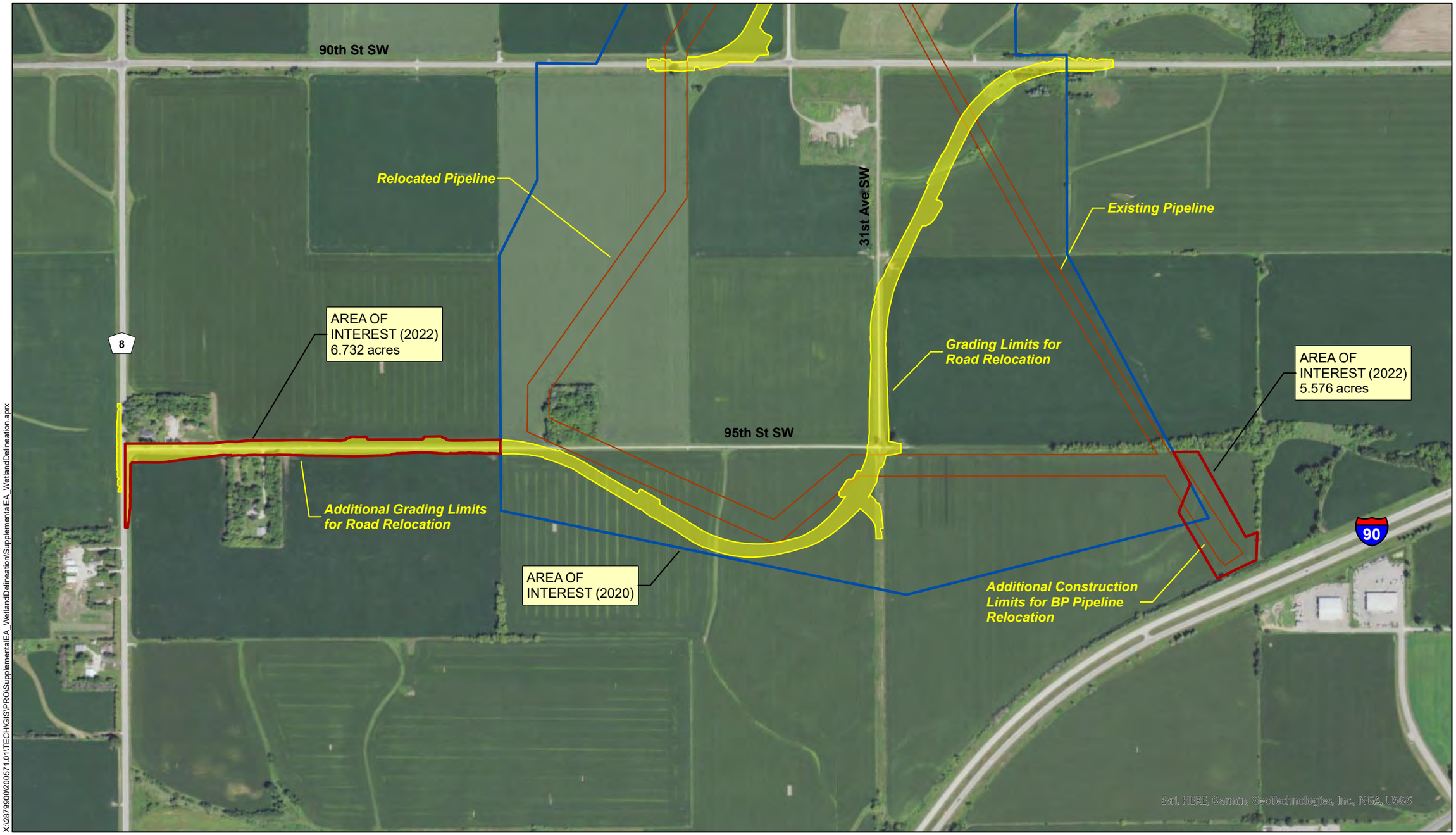
Date: June 2022

6. References

The following data sources were examined prior to fieldwork:

- Olmsted County, MN Public Web Map. Accessed at https://gweb01.co.olmsted.mn.us/WebApps/OlmstedCountyGISMap/.
- Climate Data and Summary Reports from AgACIS, WETS Climate Tables for 1971-2010. Rochester International Airport. Data accessed at http://agacis.rcc-acis.org/.
- Google Earth. Historical Aerial Images, Google Inc.
- Mead & Hunt, Inc., 2020. Wetland Delineation Report, Rochester International Airport, Runway 2-20 Planning Study. Report prepared for the City of Rochester, Minnesota. November 2020.
- Mead & Hunt, Inc., 2021. Wetland Delineation Report, Rochester International Airport, Runway 2-20 Planning Study, CTH 8 and 95th Street Intersection. Report prepared for the City of Rochester, Minnesota. May 2021.
- Minnesota Geospatial WMS Image Service. Accessed at imageserver.gisdata.mn.gov.
- National Wetlands Inventory from the U.S. Fish and Wildlife Service at https://www.fws.gov/wetlands/data/mapper.html.
- Soils Survey of Olmsted County, MN. U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, Web Soil Survey available online at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.
- U.S. Army Corps of Engineers, 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0),* ed. ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- U.S. Army Corps of Engineers, 2016. *Guidance for Offsite Hydrology/Wetland Determinations.* U.S. Army Corps of Engineers, St. Paul District and Minnesota Board of Water and Soil Resources. Accessed at https://bwsr.state.mn.us/delineation-guidance-resources.
- U.S. Army Corps of Engineers, 2020. National Wetland Plant List, version 3.5. Accessed at http://wetland-plants.usace.army.mil/. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH.
- U.S. Department of Agriculture, Natural Resource Conservation Service (USDA, NRCS), 2018. *Field Indicators of Hydric Soils in the United States*, Version 8.2, ed. L.M. Vasilas and J.F. Berkowitz. USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.

Appendix A. Project Location Map



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PROJECT LOCATION MAP

ROCHESTER INTERNATIONAL AIRPORT

0 250 500 1,000 Feet

N

Legend

Project AOI Date

- 2020
- 2022

- BP Pipeline Relocation
- Road Grading Limits

DATA SOURCES

1. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

MAP NOTES

The 2020 Area of Interested covered previously delineated wetlands which were field reviewed in 2020 and 2021 as part of an Environmental Assessment for the Runway Reconstruction Project. These were determined non-jurisdictional by USACE and the State of Minnesota under WCA.

Additional areas outside of the original EA AOI were identified during design and comprise the 2022 AOI. These areas are being addressed under a Supplemental EA process.

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022

Appendix B. NRCS Soils Mapping

Hydric Rating by Map Unit—Olmsted County, Minnesota
(Rochester (RST) Supplemental EA)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Olmsted County, Minnesota
Survey Area Data: Version 16, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 5, 2021—Oct 15, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
24	Kasson silt loam, 1 to 4 percent slopes	5	4.4	35.6%
176	Garwin silty clay loam	95	1.6	12.7%
369B	Waubeek silt loam, 1 to 6 percent slopes	0	3.5	28.3%
479	Floyd silt loam, 1 to 4 percent slopes	5	0.8	6.7%
M517A	Clyde silty clay loam, 0 to 3 percent slopes	95	2.0	16.6%
Totals for Area of Interest			**12.3**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
   A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
   B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

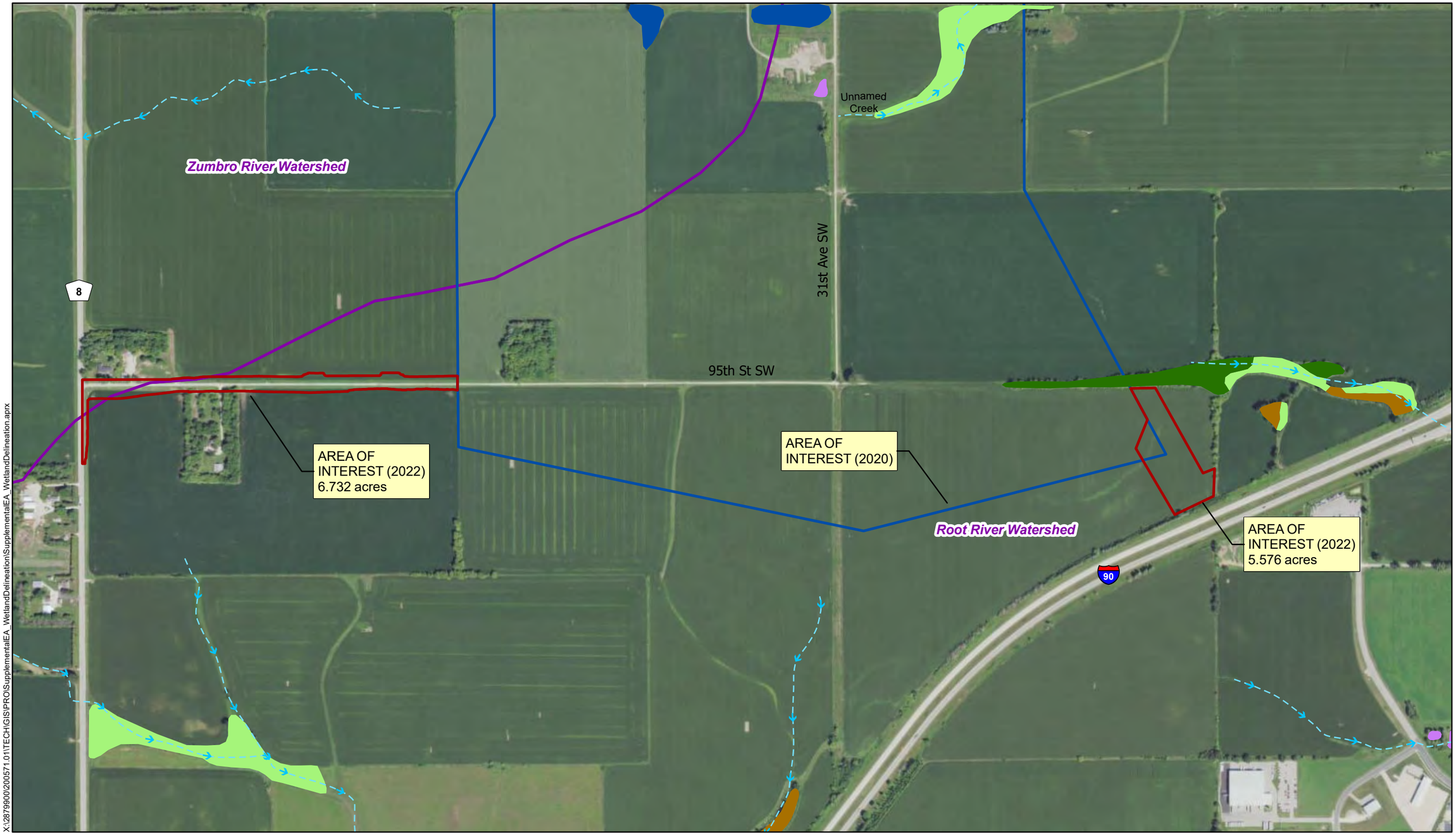
Report—Hydric Soil List - All Components

Hydric Soil List - All Components–MN109-Olmsted County, Minnesota					
Map symbol and map unit name	**Component/Local Phase**	**Comp. pct.**	**Landform**	**Hydric status**	**Hydric criteria met (code)**
24: Kasson silt loam, 1 to 4 percent slopes	Kasson	75-95	Hillslopes	No	—
	Oran	5-15	Interfluves	No	—
	Tripoli	0-10	Interfluves	Yes	2
176: Garwin silty clay loam	Garwin	95	Drainageways	Yes	2
369B: Waubeek silt loam, 1 to 6 percent slopes	Waubeek	95	Till plains	No	—
479: Floyd silt loam, 1 to 4 percent slopes	Floyd	80-100	Drainageways	No	—
	Clyde	0-10	Drainageways	Yes	2
	Ostrander	0-10	Interfluves	No	—
M517A: Clyde silty clay loam, 0 to 3 percent slopes	Clyde	70-100	Drainageways	Yes	2
	Floyd	0-10	Drainageways	No	—
	Klossner	0-10	Fens on drainageways	Yes	1
	Clyde-Frequently flooded	0-10	Drainageways	Yes	2

Data Source Information

Soil Survey Area: Olmsted County, Minnesota
Survey Area Data: Version 16, Sep 10, 2021

Appendix C. Aquatic Resources



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AQUATIC RESOURCES MAP

ROCHESTER INTERNATIONAL AIRPORT

0 250 500 1,000 Feet

N

Project AOI Date

- 2020
- 2022
- DNR Major Watershed

Legend

- Public Waters Watercourse
- Confluences and Flow Direction
- Public Waters Basin

NWI Circular 39 Class

- 1 - Seasonally Flooded Basin or Flat
- 2 - Wet Meadow
- 3 - Shallow Marsh
- 4 - Deep Marsh
- 5 - Shallow Open Water
- 6 - Shrub Swamp
- 7 - Wooded Swamp
- 8 - Bog

DATA SOURCES

1. DNR River and Stream Centerlines, Hydrography Dataset accessed at https://gisdata.mn.gov/dataset/water-dnr-hydrography
2. DNR Public Waters Basin and Watercourses accessed at https://gisdata.mn.gov/dataset/water-mn-public-waters
3. National Wetland Inventory Update for Minnesota, 2015 accessed at https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014
4. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022

Appendix D. WETS Analysis and Climatic Normals

WETS Analysis Worksheet

Project Name: **Rochester International Airport Runway 2/20 Reconstruction**
Period Of Interest: March - May
Station: **Rochester Intl AP, MN**
County: Olmsted, MN
Normals Period: 1971 - 2010

Long-term rainfall records

	Month	30% chance <	Normal	30% chance >
1st month prior:	May	2.66	3.59	4.21
2nd month prior:	April	2.12	3.05	3.63
3rd month prior:	March	1.24	1.87	2.24
		Sum =	**8.51**	

Site Determination

Site Rainfall (in)	Condition (Dry/Normal*/Wet)	Condition** Value	Month Weight	Product
4.20	Normal	2	3	6
6.83	Wet	3	2	6
2.29	Wet	3	1	3
Sum = **13.32**			Sum***=	**15**

* Normal precipitation with 30% to 70% probability of occurrence

Determination: **X** Wet
_____ Dry
_____ Normal

**Condition value:
Dry = 1
Normal = 2
Wet = 3

***If sum is:
6 to 9 then period has been drier than normal
10 to 14 then period has been normal
15 to 18 then period has been wetter than normal

Precipitation data source:
http://agacis.rcc-acis.org/

Reference:

Donald E.Woodward, ed. 1997. *Hydrology Tools for Wetland Determination* , Chapter 19. Engineering Field Handbook. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX.

WETS Table

WETS Station: ROCHESTER INTERNATIONAL AIRPORT, MN

Requested years: 1971 - 2010

Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	21.4	4.9	13.2	0.88	0.55	1.06	3	11.9
Feb	26.7	10.3	18.5	0.82	0.48	1.00	2	8.5
Mar	39.3	22.7	31.0	1.87	1.24	2.24	5	8.9
Apr	56.0	35.2	45.6	3.05	2.12	3.63	7	3.5
May	68.3	46.3	57.3	3.59	2.66	4.21	7	0.0
Jun	77.6	56.1	66.9	4.40	2.82	5.30	7	0.0
Jul	81.1	60.4	70.8	4.36	2.83	5.25	7	0.0
Aug	78.4	58.2	68.3	4.43	2.90	5.33	7	0.0
Sep	70.6	49.2	59.9	3.44	1.76	4.21	6	0.0
Oct	57.7	37.4	47.6	2.25	1.38	2.72	5	0.9
Nov	40.8	24.8	32.8	1.90	0.91	2.32	4	5.7
Dec	25.9	10.8	18.4	1.14	0.72	1.38	3	11.9
Annual:					28.39	35.25		
Average	53.7	34.7	44.2	-	-	-	-	-
Total	-	-	-	32.15			62	51.1

GROWING SEASON DATES

Years with missing data:	24 deg = 0	28 deg = 0	32 deg = 0
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 40	28 deg = 40	32 deg = 40
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	4/8 to 10/24: 199 days	4/18 to 10/12: 177 days	5/1 to 10/3: 155 days
70 percent *	4/4 to 10/29: 208 days	4/14 to 10/17: 186 days	4/28 to 10/7: 162 days

* Percent chance of the growing season occurring between the Beginning and Ending dates.

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1886							1.85	0.96	5.65	1.46	2.72	0.98	13.62
1887	0.66	2.06	0.22	3.41	1.56	5.21	2.08	5.09	4.95	2.11	1.00	2.10	30.45
1888	2.92	0.45	4.02	3.65	7.42		2.52	2.19	1.20	1.68	0.27		26.32
1889	1.12												1.12
1890													
1891													
1892													
1893			MT	M2.70	2.33	M0.69	2.74	4.65	M1.30	MT	0.40	2.46	17.27
1894		M0.25											0.25
1895													
1896													
1897													

1898													
1899													
1900													
1901													
1902													
1903													
1904													
1905													
1906													
1907													
1908							M6.86	3.77	0.92	1.03	M1.77	0.20	0.70	15.25
1909	1.47	1.20	1.05	M3.07	3.08	2.97	0.42	5.16	3.45	1.00	5.91	0.60	29.38
1910	1.65	0.05	T	0.82	2.35	T	0.84	2.94	1.98	0.58	0.20	0.45	11.86
1911	0.70	1.65	0.65	1.86	4.17	3.38	2.15	6.08	2.74	9.11	1.63	2.61	36.73
1912	0.24	0.07	0.35	1.70	5.47	1.71	4.11	4.30	1.50	0.93	1.36	1.27	23.01
1913	0.19	0.53	1.39	1.28	4.57	6.75	5.10	3.72	4.29	1.91	0.72	0.13	30.58
1914	M0.98	0.34	1.19	3.62	1.96	11.99	1.19	3.06	2.81	2.78	0.28	0.32	30.52
1915	0.41	2.30	0.65	1.15	7.14	M5.63	4.98	2.50	4.46	2.22	2.43	0.37	34.24
1916	1.70	0.58	0.92	3.94	5.02	4.34	3.15	1.79	2.69	1.44	2.11	M0.59	28.27
1917	1.23	0.34	1.36	3.01	M4.73	5.24	3.20	5.32	2.38	M1.06	0.01	M0.18	28.06
1918	M0.65	0.62	2.97	1.13	4.34	3.54	4.46	3.69	1.60	3.18	1.27	1.19	28.64
1919	M0.47	1.07	M1.73	4.44	2.25	6.66	4.23	1.48	2.16	2.46	2.37	M0.57	29.89
1920	0.92	0.06	3.10	3.09	3.79	M6.38	2.13	2.12	2.30	0.58	3.24		27.71
1921													
1922													
1923													
1924													
1925													
1926													
1927													
1928										M2.18	0.53	0.48	3.19
1929			1.31	M5.22	2.86	6.39	3.43	2.08	M5.64	1.68	0.37	0.07	29.05
1930	0.83	0.71	1.08	4.17	5.36	7.41	M2.95	1.65	4.43	2.09	1.62	0.35	32.65
1931	0.30	0.64	1.73	M1.83	2.96	3.40	M1.13	6.43	4.51	2.32	4.50	1.62	31.37
1932		0.76	0.75	1.28	3.15	2.46	1.87	3.00	1.90	0.57	M2.26	1.26	19.26
1933	2.20	0.83	1.82	1.09	3.64	2.05	4.53	1.03	5.23	1.63	0.30	0.77	25.12
1934	0.71	0.18	1.74	1.45	0.40	3.12	5.42	1.93	5.88	1.92	3.93	0.61	27.29
1935	1.13	0.73	1.07	2.63	4.34	5.53	5.00	6.51	3.56	3.17	1.52	0.52	35.71
1936	0.47	1.18	0.96	0.79	4.13	1.71	1.72	4.32	2.29	1.78	0.68	1.16	21.19
1937	1.08	0.52	0.76	2.22	3.13	5.34	0.89	3.92	2.75	1.84	0.96	0.28	23.69
1938	0.66	1.00	2.05	3.59	6.42	5.91	9.66	2.66	7.95	0.56	2.58	0.65	43.69

1939	1.02	0.73	0.61	1.93	2.35	3.90	1.53	6.04	1.06	1.56	0.09	1.10	21.92
1940	0.41	0.99	1.60	1.83	2.65	2.85	4.56	4.29	0.99	2.93	3.59	2.18	28.87
1941	1.67	0.28	2.54	1.34	4.42	5.84	1.90	0.31	6.32	3.83	0.78	0.57	29.80
1942	0.13	M0.22	M3.02	1.78	6.06	6.26	5.46	7.18	7.50	1.68	M1.02	1.37	41.68
1943	1.10	0.21	1.86	0.69	2.30	5.10	2.85	4.19	2.30	1.48	1.42	T	23.50
1944	0.68	1.01	1.04	3.52	4.22	4.16	2.71	2.39	1.03	0.24	1.07	M0.45	22.52
1945	0.65	1.74	2.53	4.54	7.28	3.69	6.08	1.86	2.18	0.50	1.17	1.94	34.16
1946	1.39	0.75	1.62	0.46	3.44	4.47	0.41	3.98	6.47	3.13	1.20	0.77	28.09
1947	1.14	0.60	1.42	2.83	4.19	4.90	2.86	6.59	3.39	2.67	1.75	1.63	33.97
1948	0.20	2.00	0.59	2.55	1.23	6.33	0.51	4.94	1.85	1.00	2.38	2.17	25.75
1949	1.86	0.19	2.71	1.11	2.35	5.23	6.96	0.65	2.59	1.40	0.82	0.73	26.60
1950	1.55	1.33	1.86	2.20	1.52	1.63	6.33	1.41	1.71	0.83	0.78	1.81	22.96
1951	0.85	2.03	4.01	3.98	3.17	5.50	8.14	4.56	2.82	2.73	1.80	0.80	40.39
1952	1.63	0.61	2.07	2.09	2.46	6.71	5.15	4.94	0.62	0.01	2.24	0.46	28.99
1953	1.23	0.94	1.67	3.50	2.82	4.33	6.95	1.80	0.33	0.20	1.95	1.26	26.98
1954	0.49	0.31	1.88	4.68	3.93	6.26	1.36	3.77	3.48	2.76	0.90	0.56	30.38
1955	0.40	1.14	0.95	2.81	2.12	2.78	3.72	1.90	1.33	1.42	0.52	1.23	20.32
1956	0.57	0.52	3.42	1.79	5.13	4.46	1.88	6.00	0.83	2.26	1.36	0.32	28.54
1957	0.18	0.47	0.77	0.86	4.73	4.16	5.81	4.65	1.44	1.74	2.69	0.50	28.00
1958	0.15	0.06	0.21	2.35	2.50	5.56	1.21	2.53	3.07	1.42	0.93	0.22	20.21
1959	0.47	1.58	1.16	1.98	5.80	5.86	2.11	6.95	4.26	2.15	1.08	1.34	34.74
1960	0.49	0.31	0.74	2.11	6.53	4.23	1.74	2.97	3.23	1.12	0.74	0.92	25.13
1961	0.07	0.94	2.70	1.77	5.32	3.91	4.99	2.51	3.96	2.19	1.23	0.70	30.29
1962	0.17	1.35	1.33	2.83	3.84	2.61	4.83	5.48	1.88	1.95	0.18	0.28	26.73
1963	0.82	0.39	1.76	2.63	1.17	3.37	3.95	3.22	2.65	1.48	2.08	0.39	23.91
1964	0.37	0.04	0.94	2.61	1.91	1.08	1.18	2.07	5.99	0.52	2.36	0.84	19.91
1965	0.45	1.34	2.85	3.92	4.14	1.53	4.67	3.40	6.26	0.27	1.31	1.41	31.55
1966	0.68	1.06	3.32	1.08	1.54	3.26	3.03	3.47	1.36	3.86	0.40	0.96	24.02
1967	2.53	0.76	1.52	3.36	1.36	8.34	1.05	3.52	1.24	2.34	0.06	0.22	26.30
1968	0.77	0.14	0.51	4.16	4.37	6.07	5.07	2.06	3.93	2.94	0.52	1.86	32.40
1969	1.25	0.14	0.99	1.35	3.04	5.66	5.38	3.36	1.59	3.18	0.70	1.66	28.30
1970	0.38	0.47	1.57	2.29	6.70	3.86	4.30	1.17	4.09	6.08	2.04	0.82	33.77
1971	1.12	2.21	0.97	1.58	3.65	4.95	3.15	1.99	3.93	3.37	2.18	0.98	30.08
1972	0.71	0.29	0.72	1.66	1.76	1.11	5.99	2.11	7.06	3.03	1.55	1.45	27.44

1973	1.05	0.88	2.85	4.26	5.26	3.24	4.85	5.71	5.84	2.60	3.37	0.99	40.90
1974	0.36	0.73	2.42	2.59	4.53	7.04	1.26	2.37	1.01	2.54	0.86	0.56	26.27
1975	1.91	0.76	1.78	3.66	2.34	3.86	1.02	5.97	0.38	0.68	4.61	1.21	28.18
1976	0.38	0.49	2.91	2.77	2.09	1.20	1.96	1.68	0.76	0.62	0.11	0.47	15.44
1977	0.37	0.97	2.94	2.91	3.74	4.65	2.34	2.63	3.65	1.97	1.51	1.57	29.25
1978	0.58	0.33	0.43	2.36	3.84	5.62	12.33	1.92	8.08	0.95	1.99	0.83	39.26
1979	1.28	0.34	2.49	2.10	3.83	2.40	2.74	9.52	0.63	4.95	2.28	0.48	33.04
1980	1.52	0.52	0.82	1.17	3.72	1.75	2.56	7.86	2.97	1.88	0.13	0.42	25.32
1981	0.23	2.00	0.54	2.47	2.69	3.46	10.46	6.44	1.01	2.13	0.85	0.72	33.00
1982	1.70	0.11	1.31	3.13	8.41	1.36	3.97	4.94	4.05	2.64	2.38	2.83	36.83
1983	0.82	1.27	2.01	2.52	3.92	4.55	3.12	4.63	4.72	2.88	3.90	1.00	35.34
1984	0.11	1.96	1.08	3.91	2.89	3.74	3.34	1.93	2.40	3.78	1.68	1.79	28.61
1985	0.63	0.57	2.31	1.58	1.74	0.94	2.57	5.40	6.41	1.53	2.43	1.14	27.25
1986	0.59	0.61	2.15	3.80	3.40	5.04	6.00	3.17	10.50	3.57	0.84	0.32	39.99
1987	0.58	0.23	1.29	1.02	2.12	3.69	7.24	3.85	2.05	1.61	1.94	1.75	27.37
1988	1.16	0.22	1.56	2.43	2.35	1.52	1.12	2.88	3.77	0.40	2.87	1.11	21.39
1989	0.41	0.42	1.65	3.49	1.74	2.39	3.31	5.73	0.61	1.67	1.62	0.38	23.42
1990	0.55	0.71	3.58	6.47	4.52	9.27	8.29	5.30	1.30	1.86	0.44	1.65	43.94
1991	0.67	0.45	2.82	5.25	3.84	2.25	5.32	4.66	2.31	1.99	5.90	1.47	36.93
1992	1.03	0.55	2.53	3.24	1.60	1.59	3.51	1.50	4.93	1.30	4.02	1.30	27.10
1993	1.15	0.83	2.92	4.56	4.32	7.44	5.00	6.88	2.75	0.85	1.00	0.74	38.44
1994	1.21	0.72	0.32	4.95	3.22	2.89	4.79	5.64	3.62	1.59	1.77	0.54	31.26
1995	0.45	0.15	2.98	2.91	3.18	3.30	3.56	3.23	2.34	3.07	0.68	0.62	26.47
1996	2.00	0.18	2.64	1.53	2.13	6.43	1.93	2.94	2.08	2.85	3.96	1.37	30.04
1997	1.63	0.92	1.63	2.32	3.05	2.59	9.00	3.23	1.85	2.71	0.26	0.38	29.57
1998	1.47	1.44	3.27	2.20	3.38	5.51	3.30	4.46	1.04	4.71	1.15	0.28	32.21
1999	2.07	M1.13	0.81	6.47	5.32	3.76	8.74	6.20	0.56	0.92	1.00	0.49	37.47
2000	1.30	0.45	0.64	0.94	7.38	12.51	5.57	5.26	1.03	1.65	3.06	1.64	41.43
2001	0.91	1.06	1.39	7.30	7.18	5.05	2.46	4.77	3.82	1.71	2.06	1.39	39.10
2002	0.65	1.68	1.24	3.40	1.47	8.20	5.00	4.64	2.02	3.50	0.12	0.56	32.48
2003	0.31	0.65	2.28	2.54	4.65	4.74	3.39	0.34	1.58	0.52	0.99	1.35	23.34
2004	0.32	1.72	2.21	2.34	6.38	8.53	4.59	3.44	5.80	2.11	1.49	0.59	39.52
2005	1.16	1.19	1.98	1.77	3.54	3.72	5.13	4.04	7.13	0.88	2.26	0.59	33.39
2006	0.30	0.40	2.54	5.51	1.86	3.45	2.90	6.25	3.34	0.79	2.84	2.04	32.22

2007	0.53	1.65	3.21	1.11	3.35	4.00	1.07	14.07	7.40	3.40	0.18	1.21	41.18
2008	0.67	0.56	1.58	4.17	3.47	7.15	3.21	1.92	1.75	2.45	2.34	1.52	30.79
2009	0.64	0.79	0.88	2.09	3.77	3.33	3.51	4.16	1.28	7.57	0.45	2.22	30.69
2010	0.58	0.79	1.05	1.62	2.04	7.79	4.98	3.72	9.95	0.79	2.86	3.68	39.85
2011	0.84	0.77	3.51	4.03	3.92	5.20	4.18	0.96	2.47	0.29	0.38	1.21	27.76
2012	0.57	1.63	1.24	2.66	4.85	3.25	3.25	1.96	1.29	1.85	0.51	1.78	24.84
2013	0.78	1.22	2.85	6.79	12.26	6.86	2.14	1.80	1.22	2.98	1.76	1.10	41.76
2014	1.00	1.76	1.15	5.64	1.78	7.27	2.23	5.36	3.54	2.37	0.91	1.02	34.03
2015	0.71	0.65	1.07	4.93	5.25	4.46	4.94	3.16	2.88	1.26	3.08	3.21	35.60
2016	0.75	0.65	3.98	1.72	4.59	5.24	5.60	5.74	9.10	2.74	1.37	2.07	43.55
2017	2.12	1.66	2.87	4.55	3.07	3.71	2.35	4.17	2.17	5.09	0.42	0.51	32.69
2018	1.42	1.08	0.91	3.18	5.19	6.38	2.88	3.22	7.58	3.63	1.61	2.10	39.18
2019	1.23	2.97	1.47	3.93	9.42	9.08	7.38	1.54	8.35	5.71	2.89	1.19	55.16
2020	1.01	1.20	2.51	1.82	5.00	4.65	3.86	4.24	2.81	1.40	2.52	0.20	31.22
2021	1.14	0.65	2.08	0.81	4.10	1.46	4.13	6.74	1.63	1.63	1.89	1.41	27.67
2022	0.83	0.41	2.29	6.83	4.20	M0.47							15.03

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2022-06-13

Climatological Data for ROCHESTER INTERNATIONAL AIRPORT, MN - May 2022

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2022-05-01	48	41	44.5	5	0	0.06	0.0	0
2022-05-02	45	39	42.0	2	0	0.00	0.0	0
2022-05-03	58	41	49.5	10	0	0.05	0.0	0
2022-05-04	61	37	49.0	9	0	0.00	0.0	0
2022-05-05	60	42	51.0	11	1	T	0.0	0
2022-05-06	67	46	56.5	17	7	0.00	0.0	0
2022-05-07	71	43	57.0	17	7	0.00	0.0	0
2022-05-08	61	50	55.5	16	6	0.21	0.0	0
2022-05-09	86	54	70.0	30	20	0.39	0.0	0
2022-05-10	74	56	65.0	25	15	0.00	0.0	0
2022-05-11	89	62	75.5	36	26	0.00	0.0	0
2022-05-12	94	65	79.5	40	30	0.00	0.0	0
2022-05-13	80	56	68.0	28	18	0.00	0.0	0
2022-05-14	86	51	68.5	29	19	0.00	0.0	0
2022-05-15	75	47	61.0	21	11	0.00	0.0	0
2022-05-16	74	49	61.5	22	12	0.00	0.0	0
2022-05-17	63	50	56.5	17	7	0.54	0.0	0
2022-05-18	73	50	61.5	22	12	0.01	0.0	0
2022-05-19	80	50	65.0	25	15	0.95	0.0	0
2022-05-20	69	49	59.0	19	9	0.14	0.0	0
2022-05-21	57	43	50.0	10	0	0.00	0.0	0
2022-05-22	57	38	47.5	8	0	T	0.0	0
2022-05-23	61	34	47.5	8	0	0.00	0.0	0
2022-05-24	64	45	54.5	15	5	0.13	0.0	0
2022-05-25	53	46	49.5	10	0	1.53	0.0	0
2022-05-26	54	47	50.5	11	1	0.06	0.0	0
2022-05-27	73	45	59.0	19	9	0.00	0.0	0
2022-05-28	82	57	69.5	30	20	0.03	0.0	0
2022-05-29	80	62	71.0	31	21	0.10	0.0	0
2022-05-30	88	64	76.0	36	26	T	0.0	0
2022-05-31	79	55	67.0	27	17	T	0.0	0
Average|Sum	69.7	48.8	59.3	606	314	4.20	0.0	0.0

Appendix E. Historic Aerial Photo Review and Hydrological Analysis

Rochester International Airport Aerial Photo Review

Location: Lat: 43.883008, Long: -92.499918
County: Olmsted
PLSS: T105N, R14W, Section 21
Olmsted-High Forest-Judge

Aerial Photo Assessment			Area of Investigation	
Year	**Day/Month**	**Precipitation**	**Area L**	**Area M**
2021	8/13/2021 (FSA-NRCS)	**Normal (10)**	CS	NV
2020	7/31/2020 (ESRI -MAXAR)	**Normal (13)**	NC	NV
2019	9/24/2019 (FSA-NRCS)	**Normal (12)**	NC	CS
2017	10/4/2017 (FSA-NRCS)	**Normal (11)**	NV	NV
2015	10/11/2015 (FSA-NRCS)	**Normal (10)**	NC	NV
2013	7/18/2013 (FSA-NRCS)	Wet (18)	NC	NV
2011	4/15/2011 (MnGEO) (South MN)	Wet (15)	CS	NV
2011	10/2011 (MnDNR) (fall color EC,SE)	**Normal (10)**	CS	NV
2010	7/1/2010 (FSA-NRCS)	**Normal (12)**	CS	NV
2009	06/26/2009 (FSA-NRCS)	Dry (9)	CS	NV
2008	7/12/2008 (FSA-NAIP)	Wet (16)	CS	NV
2006	8/3/2006 (FSA-NRCS)	Dry (8)	CS	NV
2004	7/8/2004 (FSA-NRCS)	Wet (17)	NV	NV
2003	8/8/2003 (FSA-NRCS)	**Normal (10)**	NV	NV
1991	April 1991 (USGS)	**Normal (13)**	CS	NV

Precipitation classification per Minnesota State Climatology Office website (July 1st date)

CS = Crop Stress
DO = Drowned Out
NC = Not Cropped
NV = Normal Vegetative Cover
NSS = No Soil Wetness
AP = Altered Pattern
SW = Standing Water
WS = Wetland Signature
SS = Soil Wetness Signature

Results Analysis			
		Area L	**Area M**
Hydric Soils*		PH	PN
Soil Type		Garwin silty clay loam (176)	Kasson silt loam, 1 to 4 percent slopes (24)
Percentage of Hydric Inclusions		95	5
NWI (Y/N)		N	N
Total Number of Years		15	15
Total Number of Years with Wetland		12	1
Frequency of Wetland Signature		80%	7%
Total Number of Years with Normal		9	9
Total Number of Years with Wet. Signatures in Normal Years		7	1
Frequency of Wet. Sig. Occurrence in Normal		78%	11%
Determination (Wetland/Field)		**Wetland (W)**	Non-Wetland or PC (NW)

*N=Not hydric; PN = Predominantly non-hydric; PaH= Partially hydric; PH = Predominantly hydric; AH= All hydric

Decision Matrix for Offsite Wetland Determinations

Hydric Soils	Mapped on NWI	Slides	Determination
Yes or No	No	≤30%	Non-Wetland or PC (NW)
Yes or No	No	30-50%	Field Verify (FV)
Yes or No	No	≥50%	Wetland (W)
Yes or No	Yes	≤30%	Field Verify (FV)
Yes or No	Yes	30-50%	Wetland (W)
Yes or No	Yes	≥50%	Wetland (W)

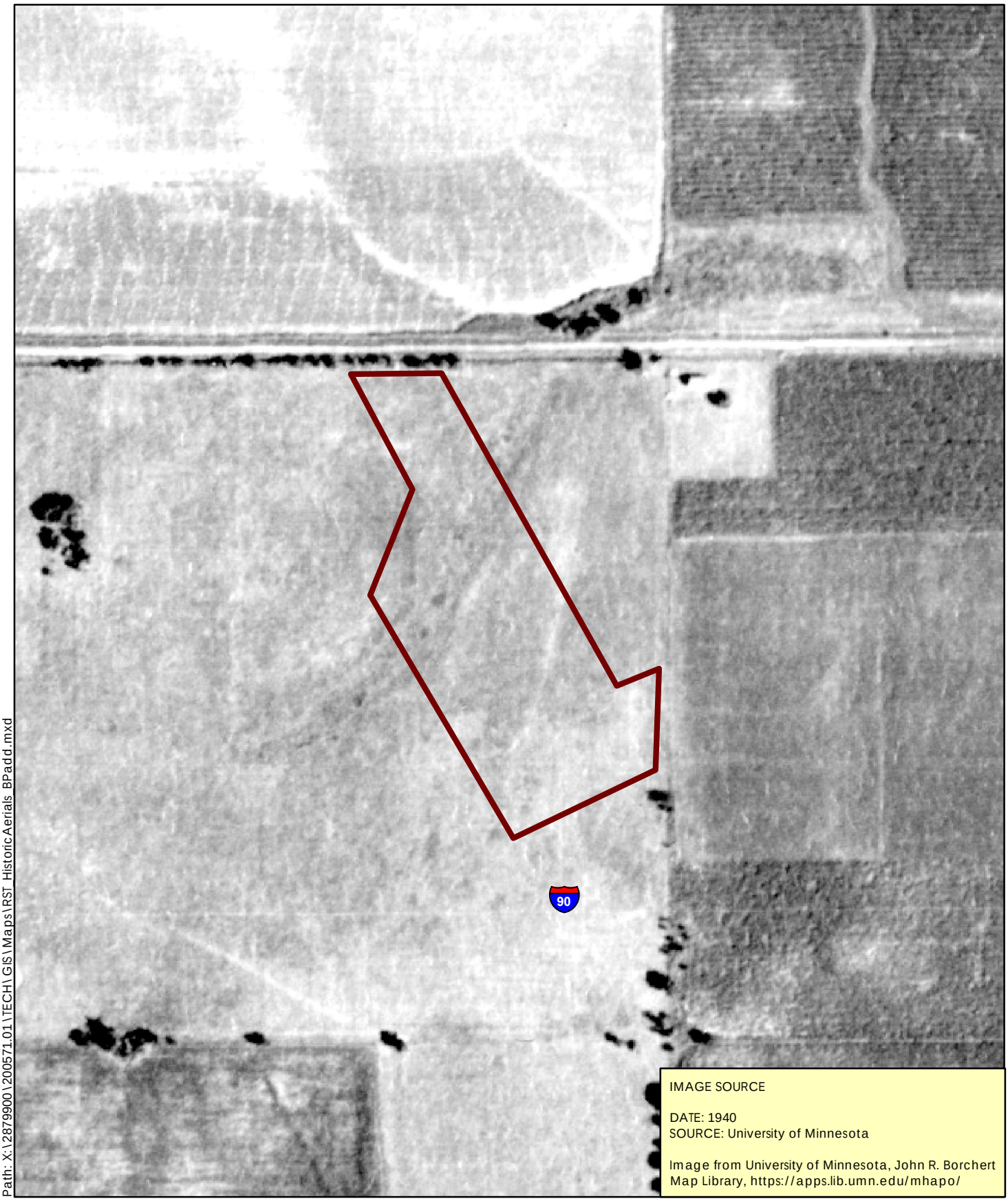

IMAGE SOURCE

DATE: 1940
SOURCE: University of Minnesota

Image from University of Minnesota, John R. Borchert Map Library, https://apps.lib.umn.edu/mhapo/

Path: X:\1287900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

0 50 100 200 300 400 Feet

N

Legend

PROJECT AOI (2022)

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

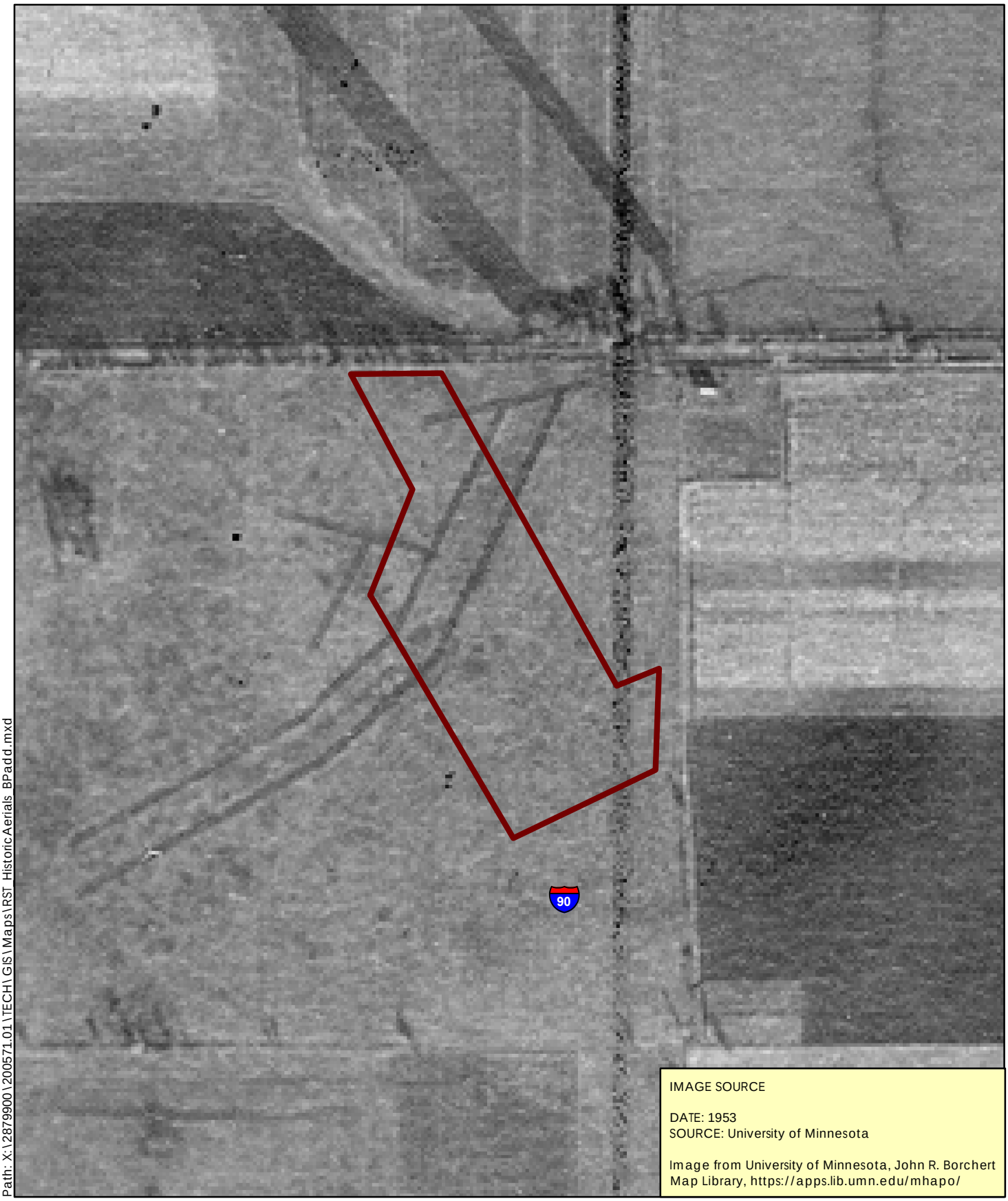

IMAGE SOURCE

DATE: 1953
SOURCE: University of Minnesota

Image from University of Minnesota, John R. Borchert Map Library, https://apps.lib.umn.edu/mhapo/

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HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

0 50 100 200 300 400 Feet

N

Legend

PROJECT AOI (2022)

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

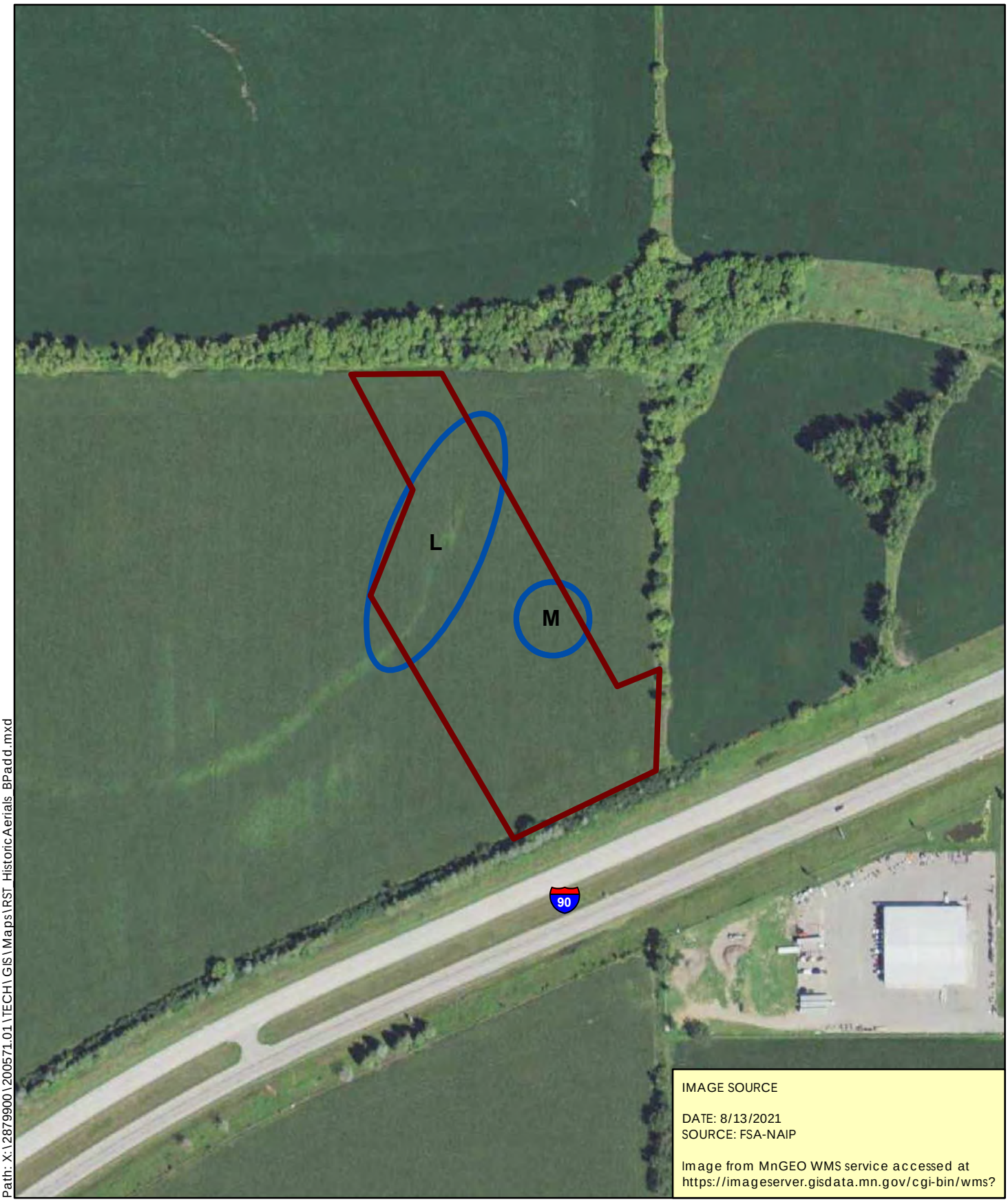

IMAGE SOURCE

DATE: 8/13/2021
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\2879900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

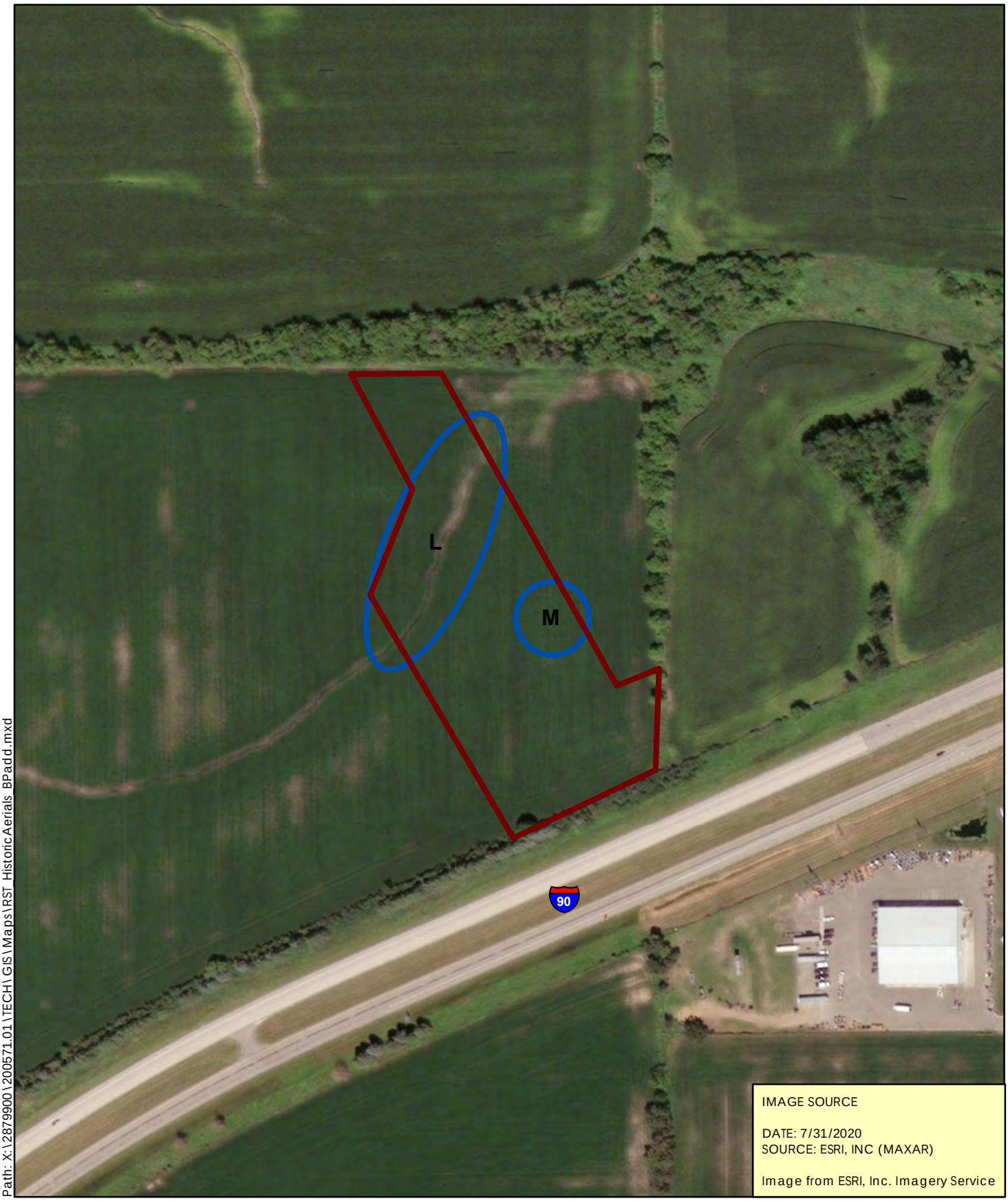

IMAGE SOURCE

DATE: 7/31/2020
SOURCE: ESRI, INC (MAXAR)

Image from ESRI, Inc. Imagery Service

Path: X:\1287900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

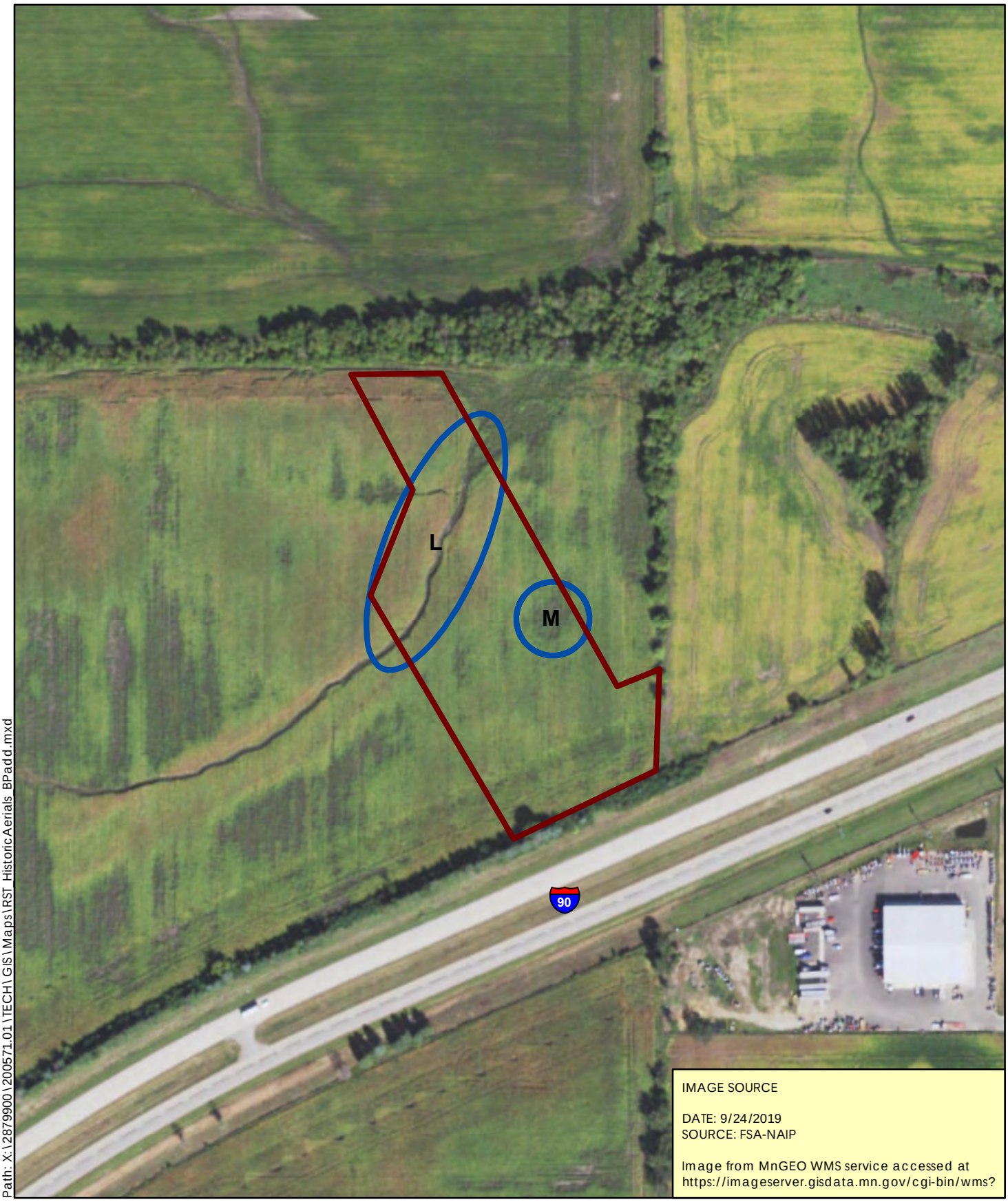

IMAGE SOURCE

DATE: 9/24/2019
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\2879900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

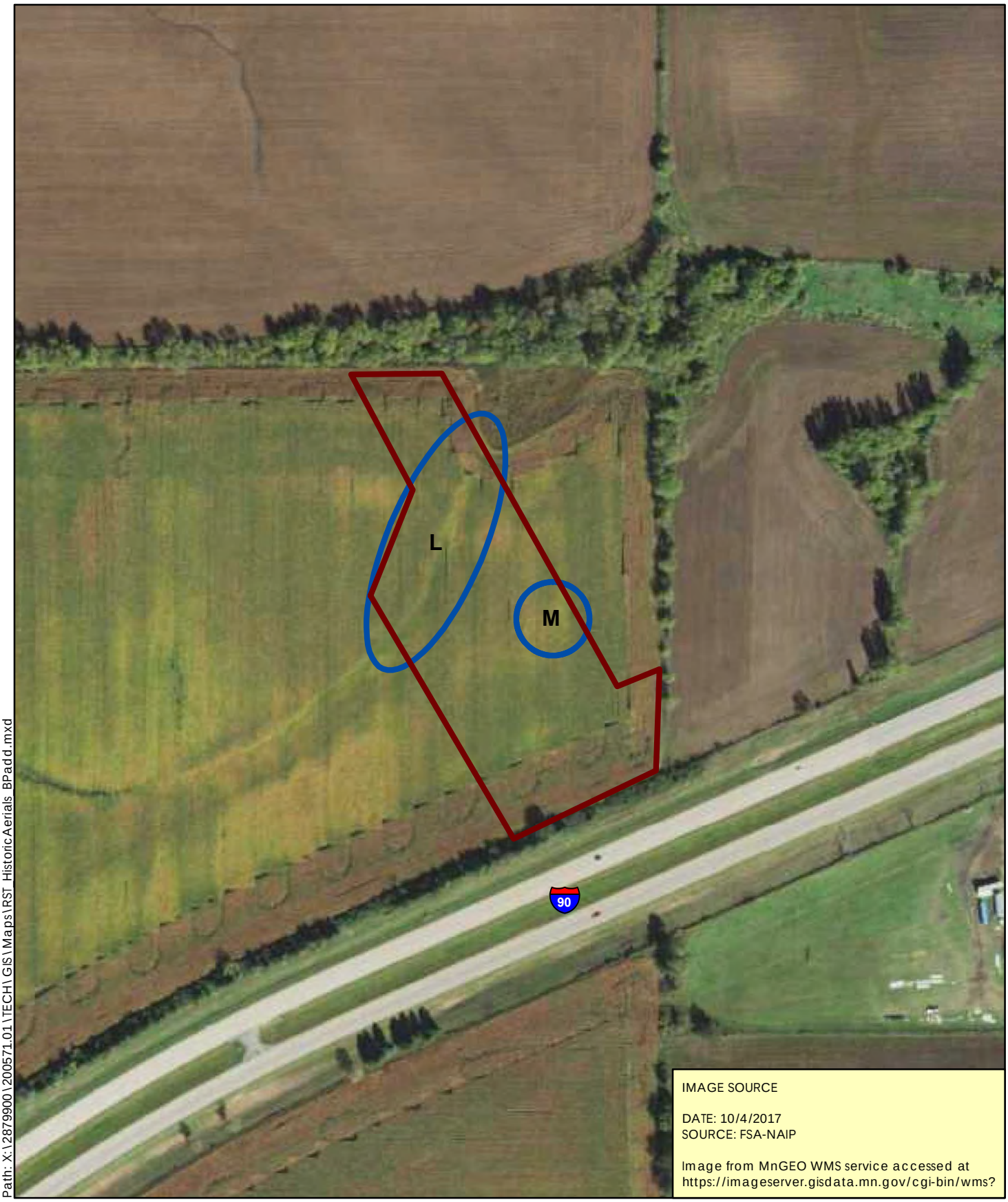

IMAGE SOURCE

DATE: 10/4/2017
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\1287900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

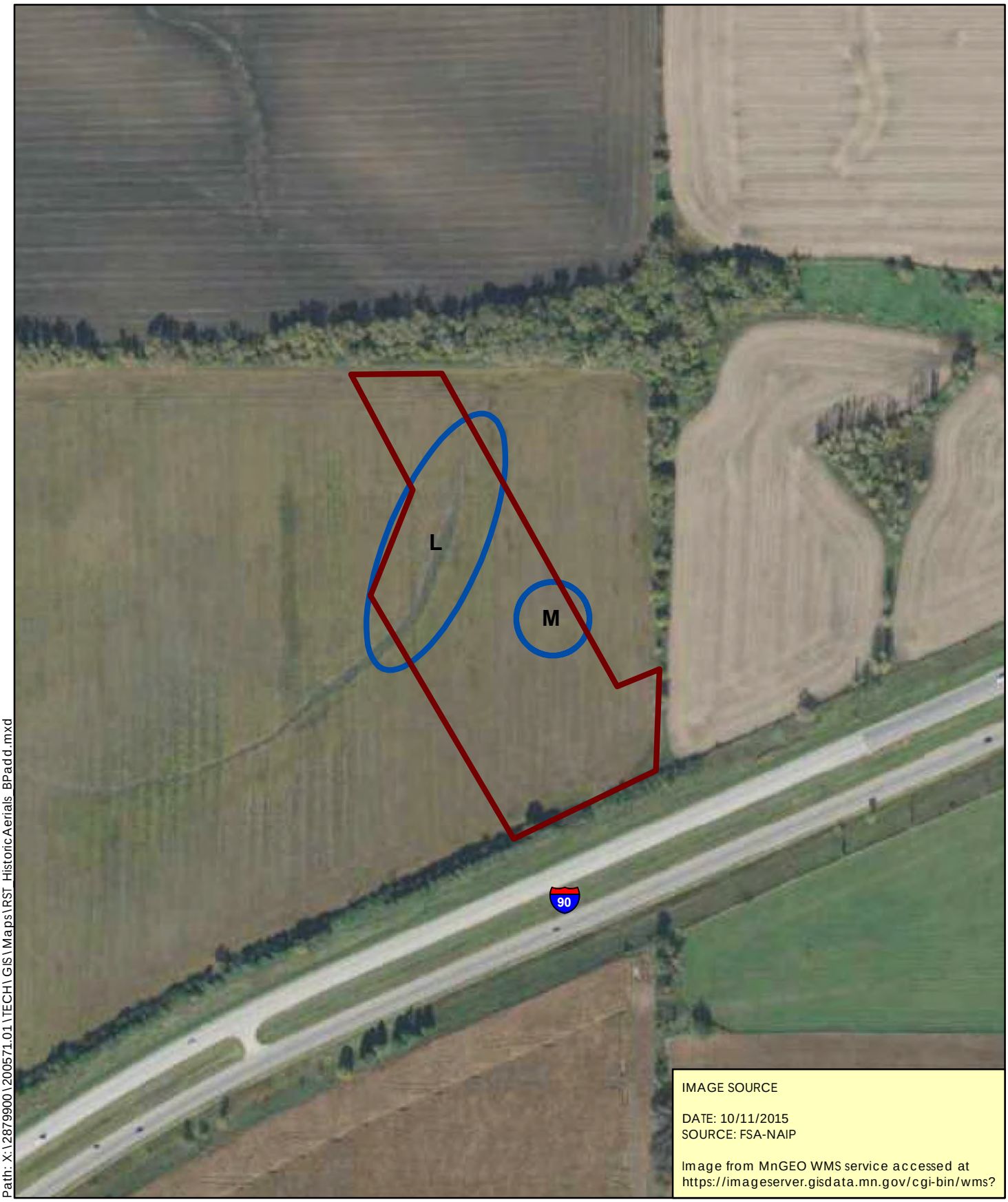

IMAGE SOURCE

DATE: 10/11/2015
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\2879900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

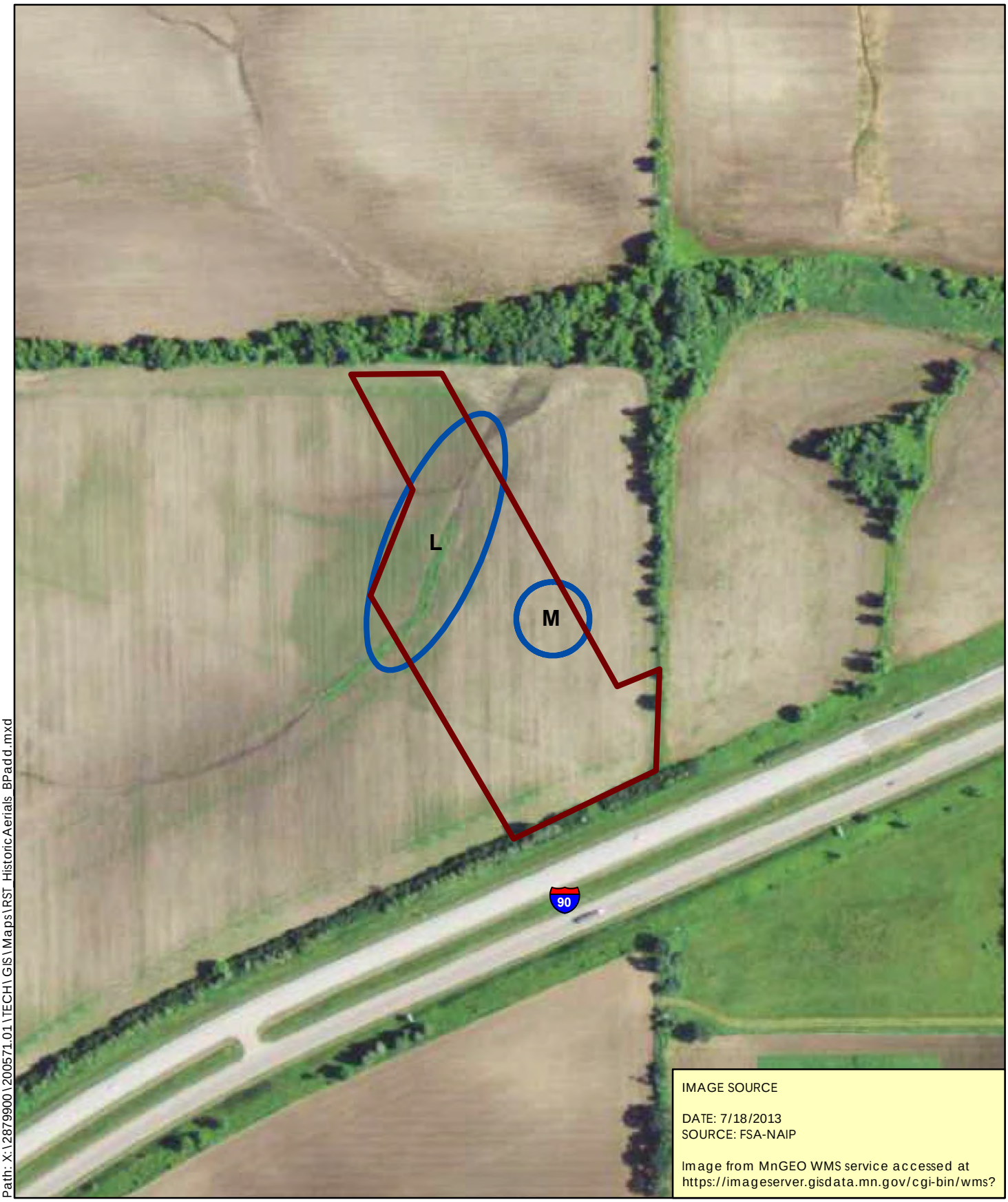

IMAGE SOURCE

DATE: 7/18/2013
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

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HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

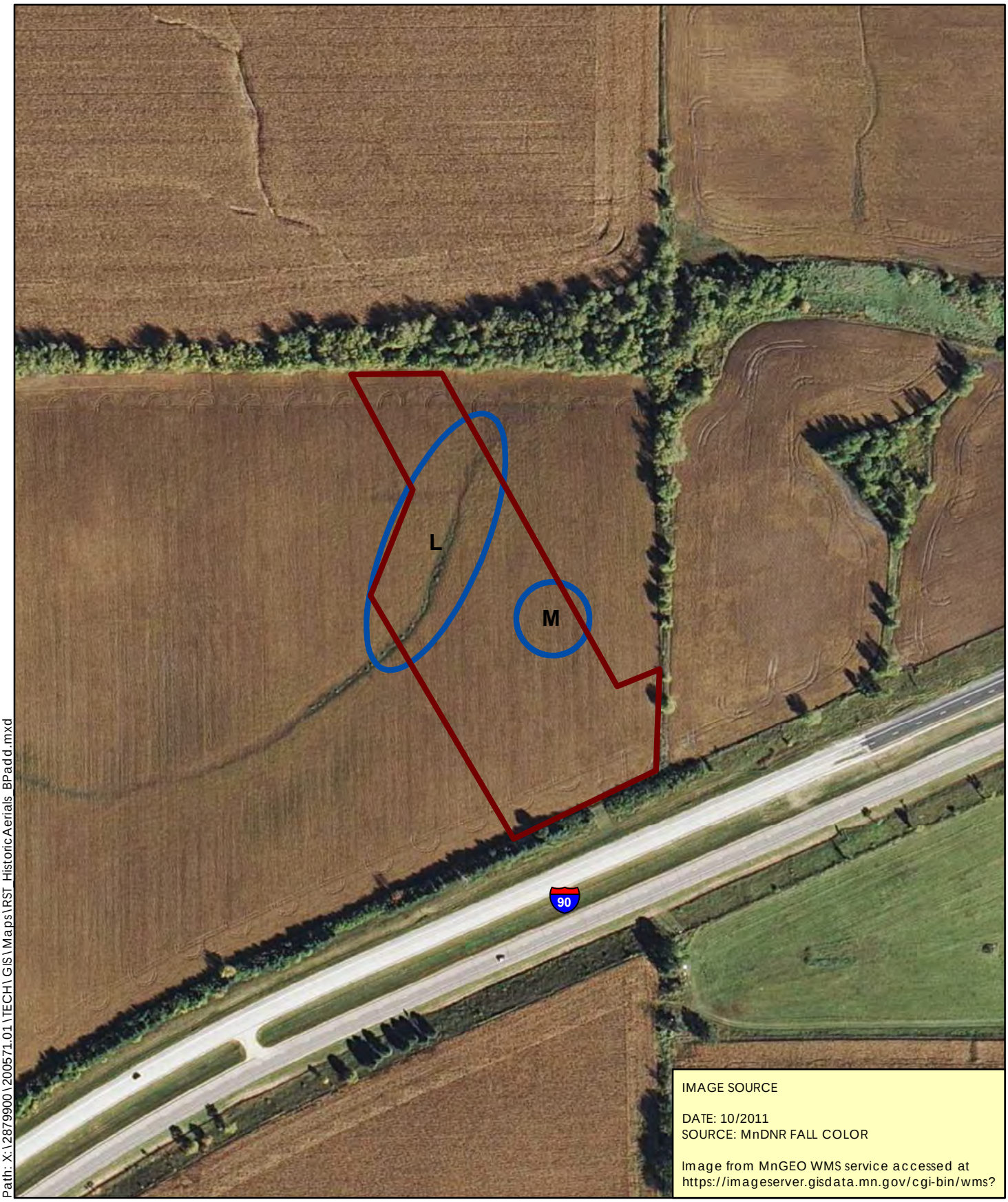

IMAGE SOURCE

DATE: 10/2011
SOURCE: MnDNR FALL COLOR

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\1287900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

IMAGE SOURCE

DATE: 4/15/2011
SOURCE: MnGEO SOUTH MN

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\2879900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

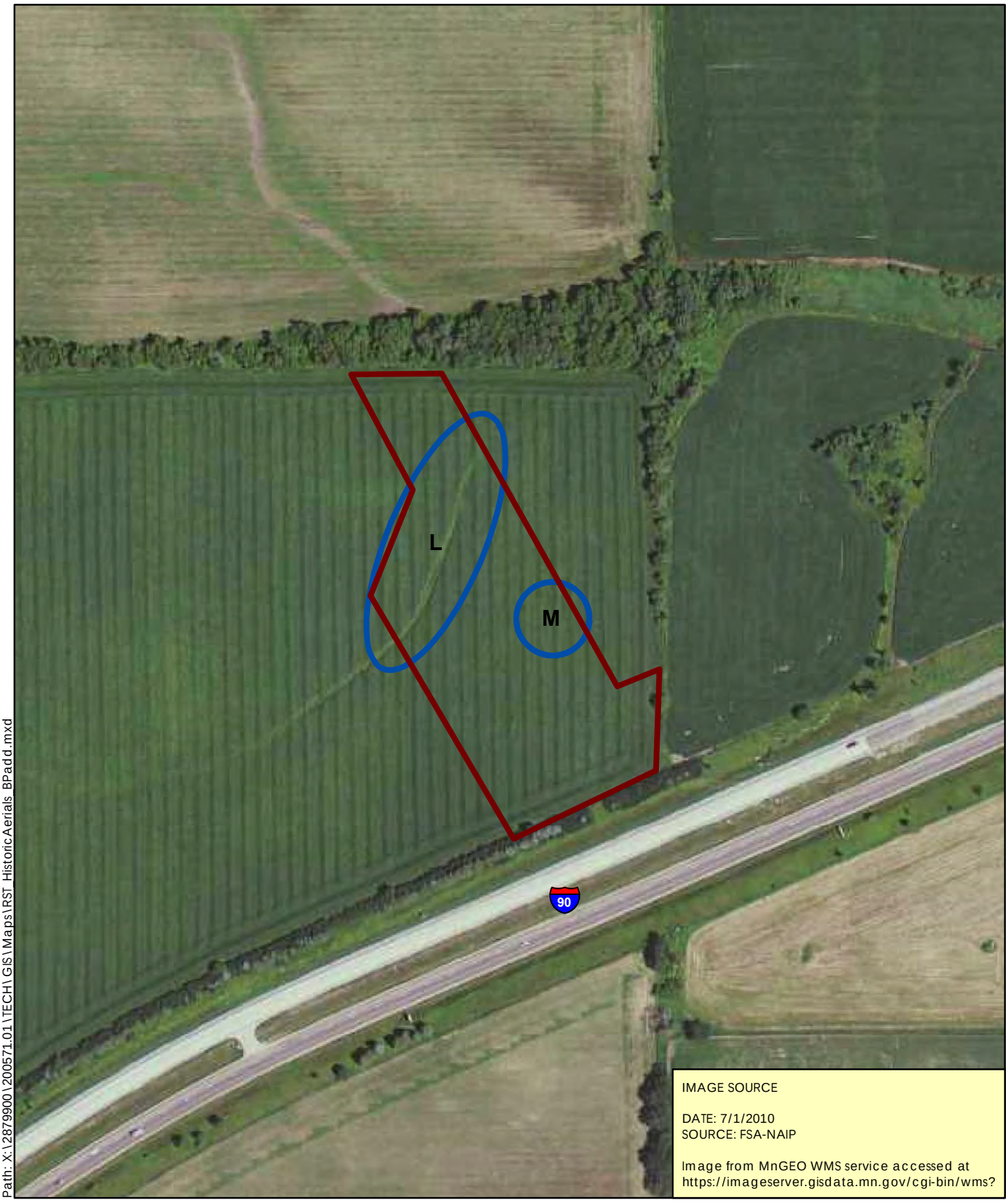

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IMAGE SOURCE

DATE: 7/1/2010
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

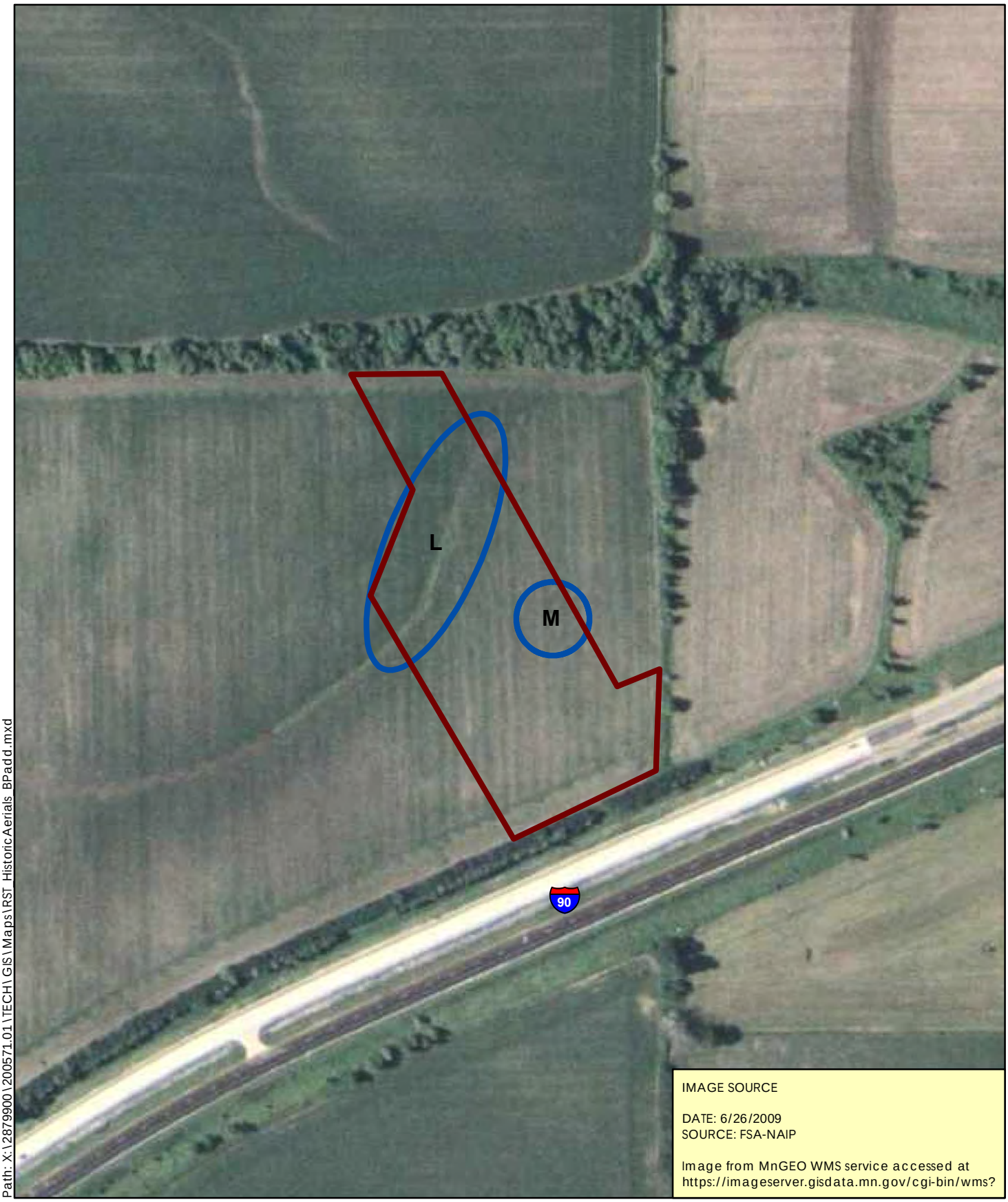

IMAGE SOURCE

DATE: 6/26/2009
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\2879900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

IMAGE SOURCE

DATE: 7/12/2008
SOURCE: FSA-NAIP

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

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HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

IMAGE SOURCE

DATE: 8/3/2006
SOURCE: FSA-NAIP

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HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

IMAGE SOURCE

DATE: 7/8/2004
SOURCE: FSA-NAIP

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HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

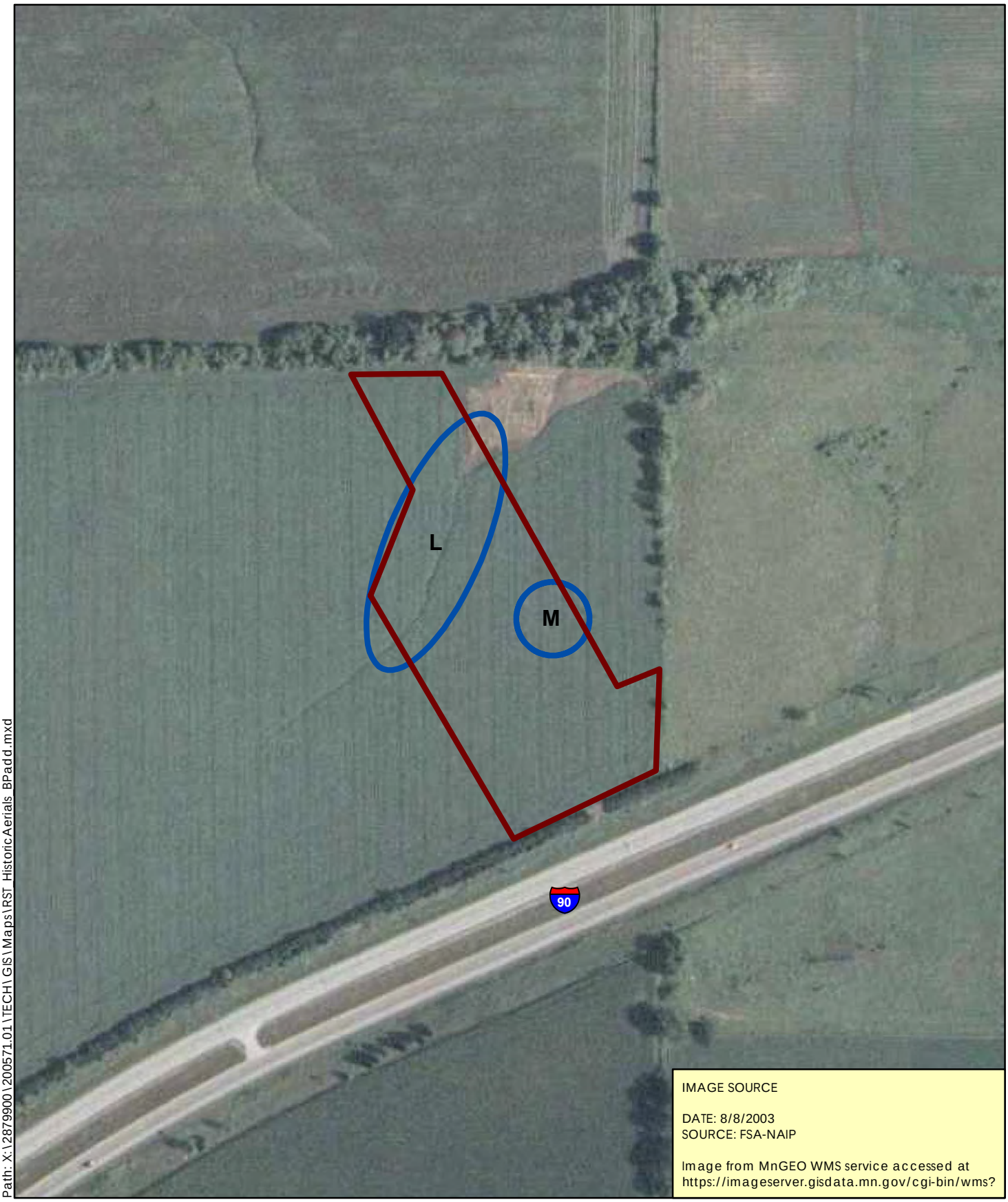

IMAGE SOURCE

DATE: 8/8/2003
SOURCE: FSA-NAIP

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HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

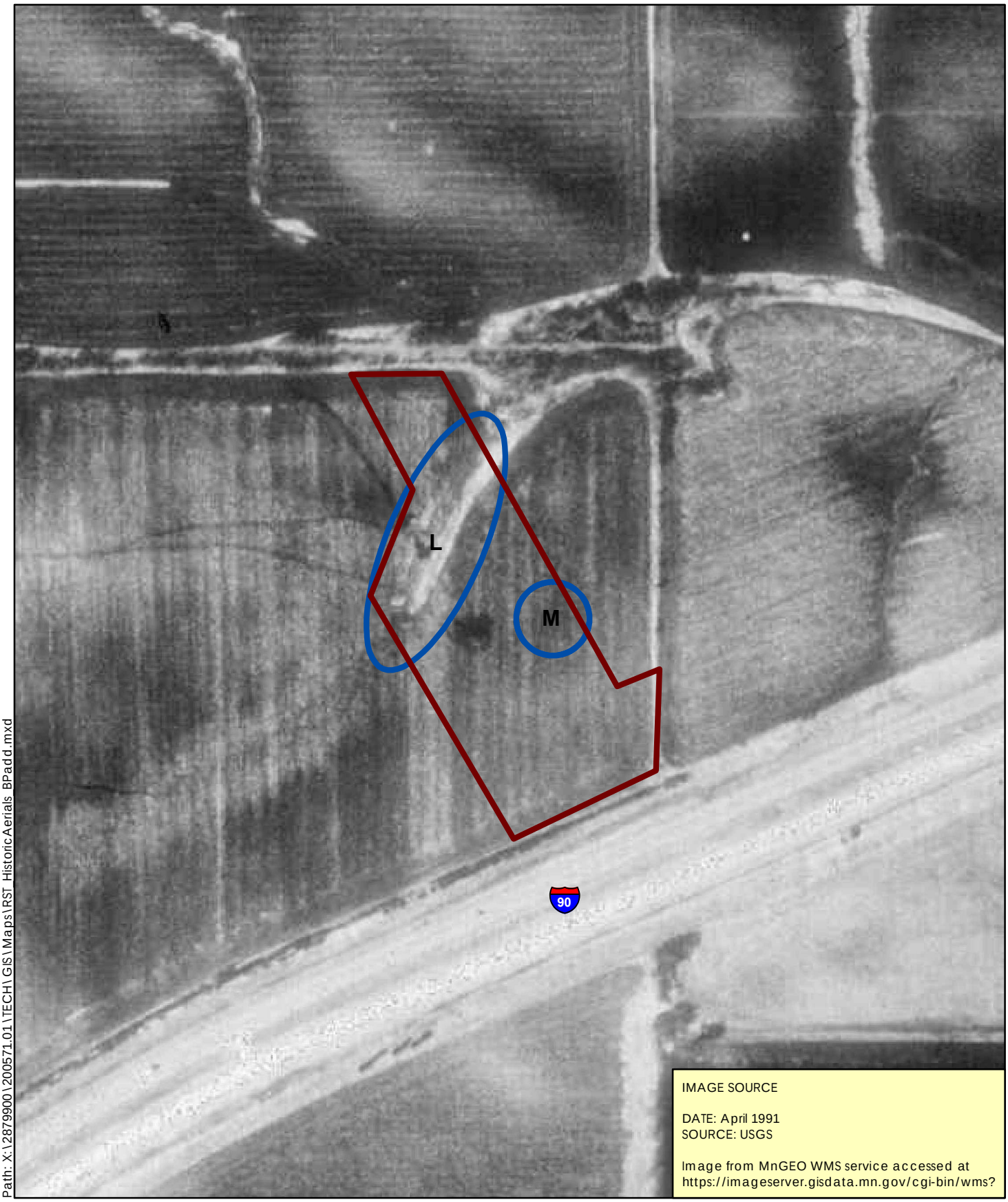

IMAGE SOURCE

DATE: April 1991
SOURCE: USGS

Image from MnGEO WMS service accessed at https://imageserver.gisdata.mn.gov/cgi-bin/wms?

Path: X:\1287900\200571.01\TECH\GIS\Maps\RST_HistoricAerials_BPadd.mxd

HISTORIC AERIAL IMAGE REVIEW

ROCHESTER INTERNATIONAL AIRPORT

Legend

- INVESTIGATION AREA
- PROJECT AOI (2022)

0 50 100 200 300 400 Feet

N

PROJECT LOCATION

Section 21, T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 5.576 acres
Field work conducted: June 1, 2022

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **21**

Aerial photograph or site visit date:
Friday, August 13, 2021

Score using 1991-2020 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **July 2021**	second prior month: **June 2021**	third prior month: **May 2021**
estimated precipitation total for this location:	**4.00**	**1.52**	**3.95**
there is a 30% chance this location will have less than:	3.25	3.65	3.23
there is a 30% chance this location will have more than:	5.02	6.55	4.86
type of month: dry normal wet	**normal**	**dry**	**normal**
monthly score	**3 * 2 = 6**	**2 * 1 = 2**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**10 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **21**

Aerial photograph or site visit date:
Friday, July 31, 2020

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **June 2020**	second prior month: **May 2020**	third prior month: **April 2020**
estimated precipitation total for this location:	**4.89**	**5.02**	**1.73**
there is a 30% chance this location will have less than:	3.38	2.64	2.23
there is a 30% chance this location will have more than:	5.01	4.09	3.95
type of month: dry normal wet	**normal**	**wet**	**dry**
monthly score	**3 * 2 = 6**	**2 * 3 = 6**	**1 * 1 = 1**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**13 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **21**

Aerial photograph or site visit date:
Tuesday, September 24, 2019

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **August 2019**	second prior month: **July 2019**	third prior month: **June 2019**
estimated precipitation total for this location:	**1.85**	**7.29**	**8.17**
there is a 30% chance this location will have less than:	3.50	3.27	3.38
there is a 30% chance this location will have more than:	5.28	5.24	5.01
type of month: dry normal wet	**dry**	**wet**	**wet**
monthly score	**3 * 1 = 3**	**2 * 3 = 6**	**1 * 3 = 3**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**12 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Wednesday, October 4, 2017

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **September 2017**	second prior month: **August 2017**	third prior month: **July 2017**
estimated precipitation total for this location:	**2.40**	**4.03**	**2.24**
there is a 30% chance this location will have less than:	1.85	3.47	3.28
there is a 30% chance this location will have more than:	4.20	5.17	5.20
type of month: dry normal wet	**normal**	**normal**	**dry**
monthly score	**3 * 2 = 6**	**2 * 2 = 4**	**1 * 1 = 1**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**11 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Sunday, October 11, 2015

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **September 2015**	second prior month: **August 2015**	third prior month: **July 2015**
estimated precipitation total for this location:	**2.62**	**3.23**	**4.70**
there is a 30% chance this location will have less than:	1.85	3.47	3.28
there is a 30% chance this location will have more than:	4.20	5.17	5.20
type of month: dry normal wet	**normal**	**dry**	**normal**
monthly score	**3 * 2 = 6**	**2 * 1 = 2**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**10 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Thursday, July 18, 2013

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **June 2013**	second prior month: **May 2013**	third prior month: **April 2013**
estimated precipitation total for this location:	**6.85**	**12.05**	**6.61**
there is a 30% chance this location will have less than:	3.37	2.63	2.20
there is a 30% chance this location will have more than:	5.04	3.99	3.94
type of month: dry normal wet	**wet**	**wet**	**wet**
monthly score	**3 * 3 = 9**	**2 * 3 = 6**	**1 * 3 = 3**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**18 (Wet)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Saturday, October 15, 2011

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **September 2011**	second prior month: **August 2011**	third prior month: **July 2011**
estimated precipitation total for this location:	**2.61**	**0.87**	**4.41**
there is a 30% chance this location will have less than:	1.85	3.47	3.28
there is a 30% chance this location will have more than:	4.20	5.17	5.20
type of month: dry normal wet	**normal**	**dry**	**normal**
monthly score	**3 * 2 = 6**	**2 * 1 = 2**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**10 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Friday, April 15, 2011

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **March 2011**	second prior month: **February 2011**	third prior month: **January 2011**
estimated precipitation total for this location:	**3.59**	**0.87**	**0.79**
there is a 30% chance this location will have less than:	1.27	0.56	0.55
there is a 30% chance this location will have more than:	2.30	0.97	1.10
type of month: dry normal wet	**wet**	**normal**	**normal**
monthly score	**3 * 3 = 9**	**2 * 2 = 4**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**15 (Wet)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Thursday, July 1, 2010

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **June 2010**	second prior month: **May 2010**	third prior month: **April 2010**
estimated precipitation total for this location:	**7.26**	**2.05**	**1.55**
there is a 30% chance this location will have less than:	3.37	2.63	2.20
there is a 30% chance this location will have more than:	5.04	3.99	3.94
type of month: dry normal wet	**wet**	**dry**	**dry**
monthly score	**3 * 3 = 9**	**2 * 1 = 2**	**1 * 1 = 1**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**12 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Friday, June 26, 2009

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **May 2009**	second prior month: **April 2009**	third prior month: **March 2009**
estimated precipitation total for this location:	**3.71**	**2.19**	**0.88**
there is a 30% chance this location will have less than:	2.63	2.20	1.27
there is a 30% chance this location will have more than:	3.99	3.94	2.30
type of month: dry normal wet	**normal**	**dry**	**dry**
monthly score	**3 * 2 = 6**	**2 * 1 = 2**	**1 * 1 = 1**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**9 (Dry)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Tuesday, July 15, 2008

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **June 2008**	second prior month: **May 2008**	third prior month: **April 2008**
estimated precipitation total for this location:	**7.12**	**3.53**	**4.50**
there is a 30% chance this location will have less than:	3.37	2.63	2.20
there is a 30% chance this location will have more than:	5.04	3.99	3.94
type of month: dry normal wet	**wet**	**normal**	**wet**
monthly score	**3 * 3 = 9**	**2 * 2 = 4**	**1 * 3 = 3**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**16 (Wet)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Thursday, August 3, 2006

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **July 2006**	second prior month: **June 2006**	third prior month: **May 2006**
estimated precipitation total for this location:	**2.70**	**3.51**	**2.06**
there is a 30% chance this location will have less than:	3.28	3.37	2.63
there is a 30% chance this location will have more than:	5.20	5.04	3.99
type of month: dry normal wet	**dry**	**normal**	**dry**
monthly score	**3 * 1 = 3**	**2 * 2 = 4**	**1 * 1 = 1**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**8 (Dry)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Thursday, July 8, 2004

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **June 2004**	second prior month: **May 2004**	third prior month: **April 2004**
estimated precipitation total for this location:	**8.76**	**6.39**	**2.23**
there is a 30% chance this location will have less than:	3.37	2.63	2.20
there is a 30% chance this location will have more than:	5.04	3.99	3.94
type of month: dry normal wet	**wet**	**wet**	**normal**
monthly score	**3 * 3 = 9**	**2 * 3 = 6**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**17 (Wet)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Friday, August 8, 2003

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **July 2003**	second prior month: **June 2003**	third prior month: **May 2003**
estimated precipitation total for this location:	**3.14**	**4.64**	**4.27**
there is a 30% chance this location will have less than:	3.28	3.37	2.63
there is a 30% chance this location will have more than:	5.20	5.04	3.99
type of month: dry normal wet	**dry**	**normal**	**wet**
monthly score	**3 * 1 = 3**	**2 * 2 = 4**	**1 * 3 = 3**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**10 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Minnesota State Climatology Office

State Climatology Office - DNR Division of Ecological and Water Resources

Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:

county: **Olmsted** township number: **105N**
township name: **High Forest** range number: **14W**
nearest community: **Judge** section number: **16**

Aerial photograph or site visit date:
Monday, April 15, 1991

Score using 1981-2010 normal period

values are in inches A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.	first prior month: **March 1991**	second prior month: **February 1991**	third prior month: **January 1991**
estimated precipitation total for this location:	**2.81**	**0.40**	**0.71**
there is a 30% chance this location will have less than:	1.27	0.56	0.55
there is a 30% chance this location will have more than:	2.30	0.97	1.10
type of month: dry normal wet	**wet**	**dry**	**normal**
monthly score	**3 * 3 = 9**	**2 * 1 = 2**	**1 * 2 = 2**
multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)	**13 (Normal)**		

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)

Appendix F. Wetland Boundary Map with Topography

AREA OF INTEREST (2022)
6.732 acres

AREA OF INTEREST (2020)

AREA OF INTEREST (2022)
5.576 acres

Map 1

Map 2

Map 3

Wetland 1

Unnamed Creek

95th St SW

31st Ave SW

Wetland ID	Cowardin Type	Circular 39 Type/ Wetland Community	Total Area within AOI (acres)	Total Area within AOI (sq ft)
1	PEM1	Type 1 (Seasonally Flooded Basin)	0.259	11,298.238

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WETLAND BOUNDARY OVERVIEW MAP

ROCHESTER INTERNATIONAL AIRPORT

0 250 500 1,000 Feet

N

Legend

- Delineated Wetland
- Map Sheet
- Confluences and Flow Direction

Project AOI Date

- 2020
- 2022

Contour Type

- Depression
- Index
- Index Depression
- Intermediate

DATA SOURCES

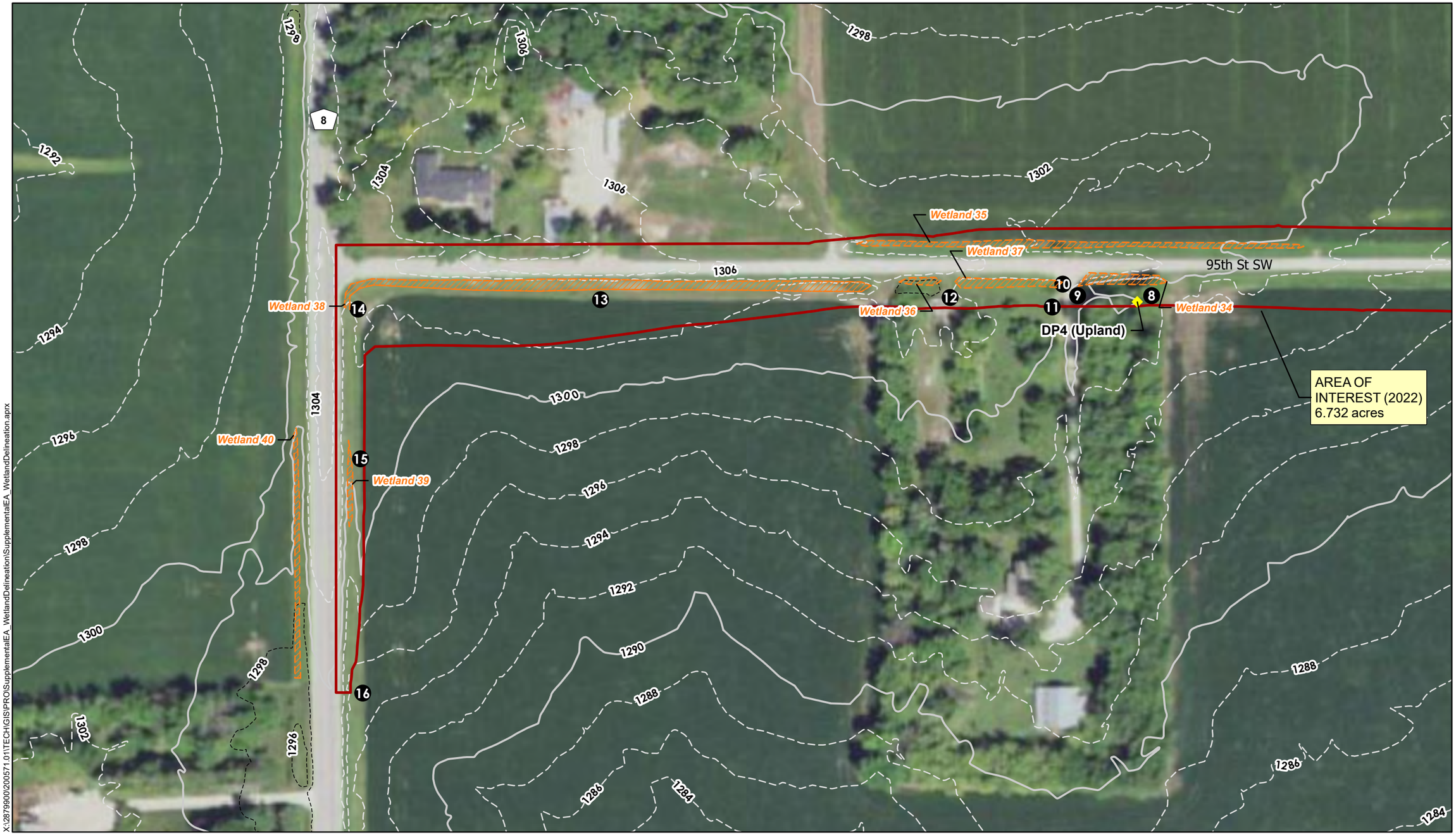
1. Contours derived from LiDAR data collected in 2008 for SE Minnesota LiDAR Collection Project. Contour interval is 2 feet. Accessed at http://arcgis.dnr.state.mn.us/maps/mntopo/
2. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

MAP NOTES

Previously delineated wetlands were field reviewed in 2020 and 2021 as part of an Environmental Assessment for the Runway Reconstruction Project. These were determined non-jurisdictional by USACE and the State of Minnesota under WCA.

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022



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WETLAND BOUNDARY MAP

ROCHESTER INTERNATIONAL AIRPORT

MAP 1 OF 3

0 100 200 Feet

N

Legend

- Delineated Wetland
- Flow Direction

Data Point Type

- Wetland
- Upland
- Photo Location
- Previously Delineated Wetland

Project AOI Date

- 2020
- 2022

Contour Type

- Depression
- Index
- Index Depression
- Intermediate

DATA SOURCES

1. Contours derived from LiDAR data collected in 2008 for SE Minnesota LiDAR Collection Project. Contour interval is 2 feet. Accessed at http://arcgis.dnr.state.mn.us/maps/mntopo/
2. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

MAP NOTES

Previously delineated wetlands were field reviewed in 2020 and 2021 as part of an Environmental Assessment for the Runway Reconstruction Project. These were determined non-jurisdictional by USACE and the State of Minnesota under WCA.

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022

WETLAND BOUNDARY MAP

ROCHESTER INTERNATIONAL AIRPORT

MAP 2 OF 3

0 100 200 Feet

N

Legend

- Delineated Wetland
- Flow Direction

Data Point Type

- Wetland
- Upland
- Photo Location
- Previously Delineated Wetland

Project AOI Date

- 2020
- 2022

Contour Type

- Depression
- Index
- Index Depression
- Intermediate

DATA SOURCES

1. Contours derived from LiDAR data collected in 2008 for SE Minnesota LiDAR Collection Project. Contour interval is 2 feet. Accessed at http://arcgis.dnr.state.mn.us/maps/mntopo/
2. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

MAP NOTES

Previously delineated wetlands were field reviewed in 2020 and 2021 as part of an Environmental Assessment for the Runway Reconstruction Project. These were determined non-jurisdictional by USACE and the State of Minnesota under WCA.

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022

Wetland 30

WETLAND CONTINUES BEYOND AOI

Wetland 1

DP2 (Upland)

DP1 (Wetland)

DP3 (Upland)

WETLAND CONTINUES BEYOND AOI

AREA OF INTEREST (2020)

AREA OF INTEREST (2022) 5.576 acres

Wetland ID	Cowardin Type	Circular 39 Type/ Wetland Community	Total Area within AOI (acres)	Total Area within AOI (sq ft)
1	PEM1	Type 1 (Seasonally Flooded Basin)	0.259	11,298.238

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WETLAND BOUNDARY MAP

ROCHESTER INTERNATIONAL AIRPORT

MAP 3 OF 3

0 100 200 Feet

N

Legend

- Delineated Wetland
- Flow Direction
- Data Point Type
  - Wetland
  - Upland
- Photo Location
- Previously Delineated Wetland
- Project AOI Date
  - 2020
  - 2022
- Contour Type
  - Depression
  - Index
  - Index Depression
  - Intermediate

DATA SOURCES

1. Contours derived from LiDAR data collected in 2008 for SE Minnesota LiDAR Collection Project. Contour interval is 2 feet. Accessed at http://arcgis.dnr.state.mn.us/maps/mntopo/
2. Image Source: FSA-NAIP 2021 accessed at https://gis.apfo.usda.gov/arcgis/services/NAIP/USDA_CONUS_PRIME/ImageServer

MAP NOTES

Previously delineated wetlands were field reviewed in 2020 and 2021 as part of an Environmental Assessment for the Runway Reconstruction Project. These were determined non-jurisdictional by USACE and the State of Minnesota under WCA.

PROJECT LOCATION

Sections 20, and 21 T105, R14W
City of Rochester
Olmsted County, MN
LRR Subregion: M
USACE Regional supplement: Midwest
Area = 12.31 acres
Field work conducted June 1, 2022

Appendix G. Data Sheets

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Rochester International Airport City/County: Olmsted Sampling Date: 6/1/2022
Applicant/Owner: City of Rochester State: MN Sampling Point: DP 1
Investigator(s): Brauna Hartzell, Mead & Hunt, Inc. Section, Township, Range: Section 21, T105, R14W
Landform (hillside, terrace, etc.): swale Local relief (concave, convex, none): concave
Slope (%): 2% Lat: 43.883646 Long: -92.500126 Datum: WGS 84
Soil Map Unit Name: Garwin silty clay loam (176) (Predominantly Hydric) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X , Soil X , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
AOI is an agricultural field and had been disced prior to review; soils and vegetation disturbed due to long-term ag practices. It is unknown whether the area is tiled but it is likely. An analysis of antecedent precipitation indicates that environmental conditions were wetter than normal range.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	=Total Cover		
Woody Vine Stratum (Plot size: 15 ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Area recently disced. No vegetation present. Within the swale, vegetation condition can not be determined; wetland determination based on presence of hydric soils and wetland hydrology.

SOIL

Sampling Point: DP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	100					Loamy/Clayey	
12-20	10YR 5/1	95	7.5YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soils are present. Hydric soils indicators Depleted Below Dark Surface (A11) and Thick Dark Surface (A12) are satisfied.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- X Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is indicated. A historic aerial photo review and hydrological analysis shows the area supports wetland hydrology in 78% of years under normal conditions (See Appendix E). It is unknown but presumed that the area has been tiled.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Rochester International Airport City/County: Olmsted Sampling Date: 6/1/2022
Applicant/Owner: City of Rochester State: MN Sampling Point: DP 2
Investigator(s): Brauna Hartzell, Mead & Hunt, Inc. Section, Township, Range: Section 21, T105, R14W
Landform (hillside, terrace, etc.): midslope Local relief (concave, convex, none): convex
Slope (%): 2% Lat: 43.883684 Long: -92.500227 Datum: WGS 84
Soil Map Unit Name: Garwin silty clay loam (176) (Predominantly Hydric) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X , Soil X , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
AOI is an agricultural field and had been disced prior to review; soils and vegetation disturbed due to long-term ag practices. It is unknown whether the area is tiled but it is likely. An analysis of antecedent precipitation indicates that environmental conditions were wetter than normal range.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	=Total Cover		
Woody Vine Stratum (Plot size: 15 ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Area recently disced. No vegetation present. At sampling point, vegetation condition can not be determined; determination based on topographic position and lack of wetland hydrology based on photo review.

SOIL

Sampling Point: DP 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100					Loamy/Clayey	
16-24	10YR 5/1	95	7.5YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soils are present. Hydric soils indicator Thick Dark Surface (A12) is satisfied.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photo review does not indicate wetland hydrology.

Remarks:

Wetland hydrology is neither present nor indicated. Data point taken at midslope of swale. It is unknown but presumed that the area has been tiled. Hydrology determination made based on photo review and topographic position along swale profile. There is about a 1 foot change in elevation between this sampling point and wetland sampling point DP1.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Rochester International Airport City/County: Olmsted Sampling Date: 6/1/2022
Applicant/Owner: City of Rochester State: MN Sampling Point: DP 3
Investigator(s): Brauna Hartzell, Mead & Hunt, Inc. Section, Township, Range: Section 21, T105, R14W
Landform (hillside, terrace, etc.): midslope Local relief (concave, convex, none): convex
Slope (%): 2% Lat: 43.883684 Long: -92.500227 Datum: WGS 84
Soil Map Unit Name: Garwin silty clay loam (176) (Predominantly Hydric) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X , Soil X , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
AOI is in an agricultural field and had been disced prior to review; soils and vegetation disturbed due to long-term ag practices. It is unknown whether the area is tiled but it is likely. An analysis of antecedent precipitation indicates that environmental conditions were wetter than normal range.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	=Total Cover		
Woody Vine Stratum (Plot size: 15 ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Area recently disced. No vegetation present. At sampling point, vegetation condition can not be determined; determination based on topographic position and lack of wetland hydrology based on photo review.

SOIL

Sampling Point: DP 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	10YR 2/1	100					Loamy/Clayey	
24-30	10YR 5/1	95	7.5YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Hydric soils are present. Hydric soils indicator Thick Dark Surface (A12) is satisfied.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Aerial photo review does not indicate wetland hydrology.

Remarks:

Wetland hydrology is neither present nor indicated. Data point taken at midslope of swale. It is unknown but presumed that the area has been tiled. Hydrology determination made based on photo review and topographic position along swale profile. There is about a 1 foot change in elevation between this sampling point and wetland sampling point DP1.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-07-24; the proponent agency is CECW-CO-R

OMB Control #: 0710-xxxx, Exp: Pending
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Rochester International Airport City/County: Olmsted Sampling Date: 6/1/2022
Applicant/Owner: City of Rochester State: MN Sampling Point: DP 4
Investigator(s): Brauna Hartzell, Mead & Hunt, Inc. Section, Township, Range: Section 20, T105, R14W
Landform (hillside, terrace, etc.): terrace/flat Local relief (concave, convex, none): none
Slope (%): 1% Lat: 43.884394 Long: -92.524571 Datum: WGS 84
Soil Map Unit Name: Waubeek silt loam, 1 to 6 percent slopes (369B) (Non-Hydric) NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation____, Soil____, or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation____, Soil____, or Hydrology____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
An analysis of antecedent precipitation indicates that environmental conditions were wetter than normal range. Sampling point taken in moist woods along 95th St.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	60	Yes	FACW
2. *Cornus alternifolia*	15	No	FAC
3. *Juglans nigra*	10	No	FACU
4. *Prunus virginiana*	10	No	FACU
5.			
	95	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. *Cornus alba*	60	Yes	FACW
2. *Lonicera tatarica*	10	No	FACU
3.			
4.			
5.			
	70	=Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. *Rubus occidentalis*	70	Yes	UPL
2. *Geum aleppicum*	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft)			
1. *Vitis riparia*	20	Yes	FACW
2. *Parthenocissus quinquefolia*	10	Yes	FACU
	30	=Total Cover	

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	145	x 2 =	290
FAC species	15	x 3 =	45
FACU species	40	x 4 =	160
UPL species	70	x 5 =	350
Column Totals:	270 (A)		845 (B)
Prevalence Index = B/A =			3.13

Hydrophytic Vegetation Indicators:
____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is present. Sampling point in moist woods on a flat area.

SOIL

Sampling Point: DP 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100					Loamy/Clayey	
16-22	10YR 4/1	100					Loamy/Clayey	
22-28	10YR 4/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Hydric soils are not present. Does not meet hydric soils criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): 22
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology is neither present nor indicated. Drainage appears to generally slope to the southeast towards the farm field on the east. Water table found at 22 inches in depth but no saturation above 12 inches.

Appendix H. Field Photographs

Photo 1. Wetland 1, swale. Data points 1, 2, and 3. View to the southwest.

Photo 2. Wetland 1, swale. Data points 1, 2, and 3. View to the southeast.

Photo 3. Wetland 1, swale. Data points 1, 2, and 3. View to the northwest.

Photo 4. Pipeline crossing, cleared View to the north.

Photo 5. Wetland 1 at AOI boundary. View to the northeast.

Photo 6. Existing pipeline, woody vegetation along fence line. View to the west.

Photo 7. Farm field at south end of AOI. View to the northwest.

Photo 8. Data Point 4 (upland). Moist woods south of th 95th St. View to the west.

Photo 9. Wooded area south of 95th St. View to the east.

Photo 10. Previously delineated ditch wetland. View to the west.

Photo 11. Turf grasses within AOI along 95th St. View to the west.

Photo 12. Vegetation along fenceline within AOI. View to the west.

Photo 13. Farm field south of 95th St. View to the east.

Photo 14. Farm field and ditch embankment along Rte 8. View to the south.

Photo 15. Farm field and ditch embankment along Rte 8. View to the south.

Photo 16. Farm field and ditch embankment along Rte 8. View to the north.

Appendix I. Delineator Qualifications

BRAUNA HARTZELL, GISP, PWS
GEOGRAPHIC INFORMATION SYSTEM (GIS) ANALYST/ WETLANDS SCIENTIST

EXPERIENCE (GIS)

Brauna Hartzell has more than 20 years of experience applying GIS software and database design techniques to support wetlands and water resources, historic preservation, community planning, transportation, aviation and military planning, and municipal infrastructure and storm water management. She has worked extensively with GIS and mapping software including ArcGIS desktop and ARC/INFO workstation and has specialized experience with 3D Analyst, Network Analyst and Spatial Analyst. She also collects environmental field data using hand-held GPS units and post-processes information for inclusion in databases and use in spatial analyses. Brauna collaborates with personnel from multiple disciplines to solve complex spatial problems through scripting and spatial analysis to deliver results and data for project-specific needs. She utilizes geoprocessing models, Python, and VBA to meet analytical needs of projects.

Brauna is experienced with GIS-related data submittal requirements associated with the Federal Energy Regulatory Commission (FERC) and the Federal Aviation Administration (FAA) data standardization initiatives. She has extensive experience developing Geodatabases with the Spatial Data Standards for Facility, Infrastructure, and Environment (SDSFIE) standard and creating Federal Geographic Data Committee (FGDC)-compliant metadata.

Brauna has specialized experience with using 3D data formats for spatial analysis, contour generation and manipulation, and geospatial modeling. She is adept in the use of LiDAR-derived data and DTMs in support of hydrology and hydraulic analyses. Additionally, she has extensive experience with SSURGO databases and the National Hydrography Dataset.

EXPERIENCE (WETLAND/ENVIRONMENTAL)

Brauna Hartzell has more than twenty years of experience in wetland delineation, wetland permitting, and restoration projects. She performs wetland and field delineations conforming to current United States Army Corps of Engineers (USACE) guidance including the Midwest and Northcentral and Northeast Regional Supplements and State standards, designs custom field data collection applications, collects field data using hand-held Global Positioning Systems (GPS) data collectors and tablets, and prepares National Environmental Policy Act (NEPA) documentation. Brauna has successfully guided numerous projects through the Section 404 permitting process.

Brauna has performed numerous wetland delineations in Wisconsin, Minnesota, and Michigan since 2002. Work included conducting the delineation, documenting field investigations and site conditions, creating wetland boundary maps, and report writing. She conducts wetland mitigation site monitoring according to established site-specific assessment protocols, performs vegetation surveys, and analyzes and presents field collected data in graphical and tabular form. She also assists in mitigation site design and construction specifications development.

Areas of Expertise

- Geographic Information Systems (GIS)
- Remote-sensing image processing
- Digital mapping
- Database design
- Wetland delineation and permitting

Education

- MS, Environmental Monitoring, 1994, University of Wisconsin, Madison
- BS, Biological Science, 1982, Florida State University, Tallahassee, Florida

Certificates

- Ecological Restoration Certificate (5-3.0 CEU classes), Restoring Minnesota Ecological Restoration Training Cooperative program, 2020

Registration/Certification

- Certified GIS Professional (GISP), GIS Certification Institute
- Professional Wetland Scientist (PWS), Society of Wetland Scientists Professional Certification Program (SWSPCP)

Training and Seminars

- Critical Methods in Delineation, University of Wisconsin-LaCrosse, 2007, 2008, 2009, 2017, 2018, 2019, 2020, 2021, 2022
- Conservation Biology, University of Wisconsin-Madison, Spring 2021
- Grasses, Sedges, and Rushes Workshop, University of Wisconsin–LaCrosse, 2017
- Wildlife Inventory and Monitoring Workshop, University of Wisconsin – Milwaukee, 2015
- Advanced Wetland Delineation Workshop, University of Wisconsin – LaCrosse, 2007
- Basic Hydric Soil Identification Workshop, University of Wisconsin – LaCrosse, 2005
- Wetlands Ecology, University of Wisconsin – Madison, Spring 2003
- Vascular Flora of Wisconsin, University of Wisconsin – Madison, Spring 2002

RELATED PROJECTS (WETLANDS)

Conservation Easement Baseline Biological Survey, 2021
Houghton County Airport
Calumet, Michigan
Lead Environmental Scientist. To mitigate for wetland impacts relating to a clearing project at the Airport, the Houghton County Memorial Airport will create a conservation easement for a 40-acre parcel owned by Houghton County**.** Brauna was lead environmental scientist responsible for overseeing and assisting with field work by a botanist and report and map creation. A Floristic Quality Assessment was performed by conducting a meander survey and collecting species cover data at eight permanent quadrat locations. The baseline report detailed field work to assess and document the 40-acre parcel as a high-quality Wooded Dune and Swale complex for creation of a conservation easement. Brauna coordinated with the Michigan Office of Environment, Great Lakes, and Energy (EGLE) to complete all necessary field requirements for the preservation of this rare plant community type.

Wetland Delineation, STH 162 Vernon and La Crosse Counties, 2021
Wisconsin Department of Transportation
Madison, Wisconsin
Lead Wetland Delineator. Brauna was lead wetland delineator in support of culvert, beam guard, and surface upgrades for a 5.6 mile stretch of State Trunk Highway (STH) 162 in Vernon and LaCrosse Counties. The project corridor extended from Coon Valley to STH 33. The area of interest consisted of the full length of the project corridor and selected areas requiring culvert and beam guard upgrades. The delineation resulted in the delineation of four wetlands. Stream assessments and Ordinary High Water Mark (OHWM) determinations were completed at two bridges within the Coon Valley municipal limits. Wetland types encountered include fresh wet meadow and shrub-scrub wetlands delineated in association with stream crossings or adjacent floodplains.

Wetland Delineation, STH 162 Vernon County, 2021
Wisconsin Department of Transportation
Madison, Wisconsin
Lead Wetland Delineator. Brauna was lead wetland delineator in support of culvert, beam guard, and surface upgrades for a 6.9 mile stretch of State Trunk Highway (STH) 162 in Vernon County. The project corridor extended from Stoddard to Chaseburg. The area of interest consisted of the full length of the project corridor and selected areas requiring culvert and beam guard upgrades. The delineation resulted in the delineation of nine wetlands. Stream assessments for five streams were completed. Wetland types encountered include fresh wet meadow wetlands delineated in association with stream crossings or adjacent floodplains.

Wetland Delineation, STH 29 Clark County, 2021
Wisconsin Department of Transportation
Madison, Wisconsin
Lead Wetland Delineator. Brauna was lead wetland delineator in support of proposed culvert and beam guard upgrades for a 15.1 mile stretch of State Trunk Highway (STH) 29 in Clark County. The area of interest consisted of separate investigation areas at selected culvert and beam guard locations and all local road intersections which resulted in the delineation of 104 wetlands. Wetland types encountered include fresh wet meadows, forested wetlands, and riparian wetlands associated with four major stream crossings.

- Grasses: Identification and Ecology Workshop, University of Wisconsin – Milwaukee workshop, 2002
- Basic Wetland Delineation Workshop, University of Wisconsin–LaCrosse, 2002

Training and Seminars

- GPS Field Collection Techniques Training Workshop for Trimble GeoXH, Seiler Instruments

Past Employment

- Information Management Systems, Inc.
- Adult Communities Total Services, Inc.
- Archeological Assessments, Inc.
- University of Wisconsin – Madison

No. of Years With Mead & Hunt

- Hired 08/28/1992

No. of Years With Other Firms

- Four

Wetland Delineation, 2020
Rochester International Airport
Rochester, Minnesota
Brauna served as lead wetland delineator in support of an environmental assessment for a proposed extension of Runway 2/20 and associated Taxiway A, along with other connected actions including the realignment of navigational equipment. The area of interest is approximately 712 acres is size and resulted in the delineation of thirty-eight wetlands. Wetland types encountered include emergent seasonally-flooded basins, and forested and fresh (wet) meadows. An off-site hydrology assessment using historic aerial photographs supported field assessment of farm fields within the study area. Agricultural areas were examined resulting in the delineation of two farmed wetlands. Brauna also completed NEPA documentation for wetlands and lead wetland permitting efforts.

Wetland Delineation, W.K. Kellogg Airport, 2020
W.K. Kellogg Airport
Battle Creek, Michigan
Brauna served as lead wetland delineator in support of an environmental documentation for a proposed road realignment to facilitate hangar development and other support services at the airport. The area of interest is approximately 52 acres is size and resulted in the delineation of six wetlands. Wetland types encountered include emergent seasonally-flooded basins and one emergent/forested wetland.

Joint Individual Permit – USACE Approval, 2019
Reconstruction and Extension of Runway 7L/25R and Taxiway A
Kenosha Regional Airport
Kenosha, Wisconsin
The proposed project includes the reconstruction and extension of Runway 7L/25R and Taxiway A at the Airport. Other actions proposed include improving the approach minimums to Runway 25R, bringing the geometries of these pavements into conformance with current standards, acquiring land and performing obstruction removal to provide clear approach and departure operations, and relocating navigational instruments and edge lighting / signage to correspond with the proposed pavement limits. Approximately 2.5 acres of wetland fill are necessary to achieve project needs. Brauna served as the lead preparer of the individual permit application which included a Practicable Alternatives Analysis.

Wetland Delineation and Biological Resources Survey, 2019
Ann Arbor Municipal Airport
Ann Arbor, Michigan
Brauna served as lead wetland delineator in support of an environmental assessment for a proposed extension of Runway 6/24 and associated Taxiway A, along with other connected actions including the removal of decommissioned navigational equipment. The area of interest is approximately 82 acres is size and resulted in the delineation of three wetlands and one stream. Habitat for identified threatened and endangered species was assessed during field work. Wetland types encountered include emergent seasonally-flooded basins and one stream approximately 300 ft long within the project area of interest.

Wetland Delineation and Biological Resources Survey, 2019
Kalamazoo-Battle Creek International Airport
Kalamazoo, Michigan

Brauna served as lead wetland delineator in support of an environmental assessment for a proposed extension of Runway 17/35 and improvement of airfield movement by correcting geometry deficiencies associated with the intersection of Taxiway C and Runway 17. The area of interest is approximately 246 acres is size and resulted in the delineation of seven wetlands. Habitat for identified threatened and endangered species was assessed during field work. Wetland types encountered include emergent seasonally-flooded basins and a large complex with multiple community types within the project area of interest.

Wetland Delineation and Biological Resources Survey, 2019
Ontonagon County Airport
Ontonagon, Michigan

Brauna served as lead wetland delineator in support of an environmental assessment for a proposed obstruction clearing for Runway 17/35. The area of interest is approximately 127 acres is size and resulted in the delineation of thirty-one new wetlands and re-examination of seven previously delineated wetlands. Habitat for identified threatened and endangered species was assessed during field work. Wetland types encountered include emergent seasonally-flooded basins, forested and scrub-shrub wetlands within the project area of interest.

Wetland Delineation and Biological Resources Survey, 2019
Houghton County Airport
Calumet, Michigan

Brauna served as lead wetland delineator in support of an environmental assessment for obstruction clearing for the Runway 25 approach and RPZ, removal of an existing farm pond, and reestablishment of a regulated stream. The parcel was recently acquired by the Airport. The area of interest is approximately 23 acres is size and resulted in the delineation of four wetlands, one stream, and one small pond. Habitat for identified threatened and endangered species was assessed during field work. Wetland types encountered include an emergent seasonally-flooded basin, three forested wetlands, and a 1-acre pond with multiple community types within the project area of interest.

Joint Individual Permit – USACE Approval, 2018
Construction of Production and Logistics Facility
Haribo of America
Pleasant Prairie, Wisconsin

The proposed project includes construction of a production and logistics facility with visitor and employee parking, warehousing capability, and other amenities. 0.6 acres of wetland fill will be necessary to achieve project needs. Brauna served as the lead preparer of the individual permit application which included a Practicable Alternatives Analysis.

Wetland Delineation, W.K. Kellogg Airport, 2018
W.K. Kellogg Airport
Battle Creek, Michigan
Brauna served as lead wetland delineator in support of an environmental assessment for proposed grading and site improvements to facilitate hangar development and other support services at the airport. The area of interest is approximately 180 acres is size and resulted in the delineation of six wetlands. Wetland types encountered include emergent seasonally-flooded basins and aquatic bed wetlands.

Wetland Delineation, Crystal Airport, 2018
Metropolitan Airports Commission
Brooklyn Center, Minnesota
Brauna served as lead wetland delineator in support of alternatives analysis for an environmental assessment for proposed airfield improvements. The area of interest is approximately 50 acres is size spread over eight areas and resulted in the delineation of seven wetlands. Wetland delineated consisted of emergent Type 1 seasonally-flooded basins.

Wetland Delineation, STH 73, Juneau and Monroe counties, 2018
Wisconsin Department of Transportation
Madison, Wisconsin
Brauna served as lead wetland delineator in support of bridge replacements and beam guard upgrades along a 19.4 mile stretch of State Trunk Highway (STH) 173 slated for roadway resurfacing improvements in Juneau and Monroe counties. Wetlands were delineated in association with bridge crossings at three stream crossings and areas of beam guard upgrades. Wetland types encountered include: fresh wet meadows and hardwood and shrub swamps.

Wetland Delineation, STH 164 Waukesha County, 2018
Wisconsin Department of Transportation
Madison, Wisconsin
Brauna served as lead wetland delineator managing two delineator teams in support of resurfacing and intersection upgrade alternatives analysis for a 4.6 mile stretch of State Trunk Highway (STH) 164 in Waukesha County. The area of interest is approximately 133 acres is size and resulted in the delineation of 22 wetlands. Wetland types encountered include: fresh wet meadows, hardwood and shrub swamps, and riparian wetlands associated with six major and minor stream crossings.

Wetland Delineation, Seminary Springs Road Bridge Replacement, 2018
Town of Burke
Dane County, Wisconsin
The proposed project in the Town of Burke includes topographic survey, wetland delineation, and construction design and plan preparation for the replacement of a bridge carrying Seminary Springs Road. Brauna performed the wetland delineation for the bridge crossing and other adjacent areas with potential for road re-alignment. The area of interest consisted of 6.1 acres and wetland types encountered included wet meadow and forest. Some of the area of interest was in agricultural production.

Joint Section 404 – WCA Permit and Compensatory Mitigation Plan, 2017
Detroit Lakes-Becker County Airport
Detroit Lakes, MN
The proposed project at the Airport includes a relocation of the Runway 13 threshold 1,000 feet to the southeast to provide a 5,200-foot long runway which accommodates an instrument approach with CAT-I minimums. Additionally, a full-length taxiway will be constructed. In total, the proposed project will address airfield design deficiencies, improve runway pavement condition, and meet runway length requirements. Approximately 14 acres of wetland fill will be necessary to achieve project needs. A compensatory mitigation plan is included in the permit application. Brauna served as the lead preparer of the permit application.

Wetland Delineation, I-43 Ozaukee/Milwaukee counties, 2017
Wisconsin Department of Transportation
Madison, Wisconsin
Brauna served as lead wetland delineator in support of roadway design alternatives analysis for a 1.4 mile stretch of Interstate highway in Ozaukee and Milwaukee counties. The area of interest is approximately 92 acres is size and resulted in the delineation of 61 wetlands. Wetland types encountered include: fresh wet meadows, and hardwood and shrub swamps.

Wetland Delineation and Re-certification, Waukesha County, 2017
Waukesha County Airport
Waukesha, WI
Brauna served as the lead wetland delineator to update and re-certify previously delineated wetland boundaries more than 5 years old. Airfield projects spanning more than 8 years necessitated multiple delineations. Permitting for the current Runway Safety Area (RSA) improvement project required a reassessment of previous wetland boundaries. The boundaries of 12 previous identified wetlands were investigated during field work using hand-held GPS equipment. Three boundaries were updated based on changed environmental conditions and one new wetland was identified in an area not previously investigated. Sampling points and photographs combined to provide documentation of the re-certification.

Wetland Delineation, Lake Elmo Airport, 2017
Metropolitan Airports Commission
Lake Elmo, Minnesota
Brauna served as lead wetland delineator in support of alternatives analysis for an environmental assessment for a proposed runway relocation and associated improvements. The area of interest is approximately 130 acres is size and resulted in the delineation of nine wetlands, one of which was in agricultural production. Wetland types encountered include: shallow marsh, fresh wet meadows, and shrub swamps. A functional assessment was performed using the MN Rapid Assessment Method (MNRAM), updating existing information and assessing newly delineated wetlands.

Wetland Delineation, Green Bay-Austin Straubel International Airport, 2017
Wisconsin Bureau of Aeronautics
Brown County, Wisconsin
Brauna served as lead wetland delineator in support of an environmental assessment for a proposed expansion to the East General Aviation apron and regrading associated with Runway 6/24. The area of interest is approximately 65 acres is size, covering

airport infield areas, which resulted in the delineation of 23 emergent wet-meadow wetlands.

Wetland Delineation, STH 48/US 53 Interchange Improvements, 2017
Wisconsin Department of Transportation
Rice Lake, Wisconsin

Brauna served as the lead wetland delineator in support of permitting for interchange improvements to address safety, geometric and operational deficiencies, and improve facilities for non-motorized traffic. The area of interest is approximately 17.5 acres in size and resulted in the delineation of nine wetlands. Wetland types encountered include fresh wet meadows and ditch wetlands.

Wetland Delineation, Ontonagon County Airport, 2016
Michigan Bureau of Aeronautics
Ontonagon County, Michigan

Brauna served as the lead wetland delineator in support of permitting and on-site mitigation activities related to proposed wetland disturbance in another area of the airport. The area of interest is approximately 19.4 acres in size and resulted in the delineation of 11 wetlands in areas previously in agricultural production. Brauna also performed groundwater well monitoring and data analysis in support of mitigation site design.

Wetland Delineation, Central Wisconsin Airport, 2016
Wisconsin Bureau of Aeronautics
Mosinee, Marathon County, Wisconsin

Brauna served as the lead wetland delineator in support of master planning activities related to determining the viability of shifting Runway 17/35 to the south. The area of interest is approximately 70 acres in size and resulted in the delineation of three large wetlands on airport property and two off-site. The three on-site wetlands experience regular mowing and other maintenance activities as well as show evidence of groundwater contact on a sloping terrain with a seasonal high-water table; off-site wetlands consisted of an alder and a hardwood swamp.

Little Rock Lake Wetland Survey, 2016
National Ecological Observatory Network (NEON), Boulder, CO
Vilas County, Wisconsin

Brauna served as the lead wetland scientist in support of site equipment layout investigations for long-term ecological monitoring. A total of four wetlands were delineated within the area of interest at this mesotrophic seepage lake covering about 39 acres. Each proposed equipment installation site was surveyed and wetlands delineated in close proximity to any proposed location.

STH 67 Resurfacing Design and Environmental Documentation, 2016
Wisconsin Department of Transportation (WisDOT) Northeast Region
Fond du Lac County, Wisconsin

Mead & Hunt led redesign of this 20-mile corridor of STH 67 spanning Fond du Lac County through both rural and developed sections. In support of environmental documentation, a wetland delineation was performed within the right-of-way for the corridor. Wetland types encountered include shallow marsh, fresh wet meadows, shrub swamps, and riparian wetlands. In total, 69 wetlands were delineated. Brauna assisted with wetland delineation and survey, mapping and data management.

Interstate Highway (IH) 90/94 Corridor Study, 2013-2017
Wisconsin Department of Transportation (WisDOT) Southwest Region
Portage, Juneau, Sauk, and Columbia Counties, Wisconsin

Mead & Hunt is leading a team that is conducting a corridor study of IH 90/94 from US12/WIS 16 to IH39. The project consists of evaluating operational and safety issues, review of the interchanges and ramps within the corridor, and evaluating possible expansion. Environmental studies are being conducted and include; cultural resources surveys, endangered species surveys, contaminated material investigations, noise analysis and wetland delineations. Brauna is a wetland scientist assisting in the delineation, wetland field data collection and mapping. Cost: $210 million

Wetland Mitigation, Runway 14/32 Safety Area, 2004-2011
WisDOT Bureau of Aeronautics
Madison, Wisconsin

Brauna served as project scientist for this reconstruction of a runway safety area and railroad within a state natural area. 140 acres of fen and sedge meadow were restored and enhanced, and 6,000 feet of Starkweather creek was restored with an annually flooded riparian corridor. The project also included restoration of ten acres of swamp forest and 35 acres of upland buffer, plus negotiation of annual management and monitoring to enhance rare plant habitats within Cherokee Fen. The mitigation cost was more than $1.5 million, with a total project construction cost of $25 million. Brauna assisted with wetland monitoring and collection of botanical and hydrologic data for compliance. She also monitored for invasive species.