Sensitive Areas Analysis Report (Revised)

Conifer Power Lone Tree Sensitive Areas Analysis
Parcel No. 1801476001
Highway 22 and Sioux Avenue
Lone Tree, Johnson County, Iowa

December 27, 2022

Terracon Project No. 06227115R

Prepared for:
PCR US Investments Corp
Houston, Texas

Prepared by:
Terracon Consultants, Inc.
Cedar Rapids, Iowa

TABLE OF CONTENTS

APPENDICES

1.0 SITE LOCATION AND PROJECT DESCRIPTION

Terracon understands that PRC US Investments Corp (the Client) and Conifer Power are preparing preliminary plans to develop the site, located at Highway 22 and Sioux Avenue, with an approximate 10-megawatt solar facility. The location of the site is indicated on the attached Exhibits and is further described in Table 1 below.

Table 1. Site Information

Site	Parcel No.	County, State	Approximate Size (Acres)	Additional Information
Lone Tree	1801476001	Johnson, Iowa	36.40	Owner: No Gen-tie route identified by client.

2.0 SCOPE OF SERVICES

2.1 Task 1: Critical Wildlife Habitat Review

To determine if critical wildlife habitat exists on-site, Terracon utilized the Iowa Department of Natural Resources (IDNR) PERMT site in addition to the Information for Planning and Consultation (IPaC) websites to obtain updated information pertaining to the site. Terracon had previously obtained information from the IDNR PERMT and IPaC websites for past work completed at the site (Preliminary Threatened and Endangered Species Habitat Assessment Review dated June 17, 2022). However, updated documentation was obtained to reflect current conditions at the site. After review of the updated documentation provided by the IDNR PRMT and IPaC sites, there appears to be no critical wildlife habitat on-site. The species list as well as agency communications are included in Appendix C.

2.2 Task 2: Floodplain and Floodway Review

To determine if floodplains and/or floodways are present on-site, Terracon reviewed the Federal Emergency Management Agency (FEMA) Fire Insurance Rate Map (FIRM) panel numbers 19103C0340E and 19103C0405E, both maps have been effective since February 16, 2007. Based on a review of the FEMA FIRM maps, the site does not appear to be within a floodplain or floodway. The site is in Zone X, which is an area of minimal flood hazard. However, areas adjacent west and northeast of the site are in Zone A, which are areas with 1% annual chance of flooding over the life of a 30-year mortgage. A FEMA FIRM map is included in Appendix A, Exhibit 1.

2.3 Task 3: Historic Properties Review

To determine if historically significant structures or significant archaeological sites are present in the project area, Terracon reviewed the previously completed Desktop Cultural Resources Assessment dated May 5, 2022. Based on review of the previous report, the area of potential effect is currently undeveloped with agricultural fields, and there were no previously recorded archeological sites identified in the project area.

Terracon engaged the State Historic Preservation Office (SHPO) for recommendations based on the Desktop Cultural Resources Assessment dated May 5, 2022. Based on conversations with SHPO, it was recommended that a pedestrian survey be performed. Terracon, on the behalf of PCR, engaged Bear Creek Environmental to complete the pedestrian survey. Based on the Phase I Archaeological Investigation performed by Bear Creek and dated December, 2022, no cultural materials were observed or collected from the project area during the investigation. Based on those findings, Bear Creek does not recommend further cultural resource investigations for this project at this time. Should cultural materials be discovered during proposed development activities, those activities should cease and the SHPO contacted about the discovery.

The Desktop Cultural Resources Assessment and Bear Creek report are included Appendix B.

2.4 Task 4: Prairie and Prairie Remnants Review

Terracon utilized aerial photos to determine the cropping history of the site. Based on review of the aerial images, it appears as though the site has been utilized for agricultural row crop production since at least 1937. Due to the utilization of the site as agricultural row crops, there does not appear to be prairie or prairie remnants located on-site. The referenced aerial images are included in Appendix A, Exhibit 2.

2.5 Task 5: Savanna and Savanna Remnants Review

Terracon utilized aerial photos to determine if savannas or savanna remnants are present on-site. Based on review of the aerial images, it appears as though the site has been utilized for agricultural row crop production since at least 1937. There does not appear to be savannas or savanna remnants located on-site. The referenced aerial images are included in Appendix A, Exhibit 2.

2.6 Task 6: Significant Slopes Review

Terracon utilized topographic maps to identify landforms that may contain slopes that are at a high risk to erode, slide, or collapse, as well as classify slopes as either a critical or protected slope. A critical slope is a landform with a grade between 25%-35%, and a protected slope is a landform with a grade that exceeds 35%. Based on review of the topographic maps as shown in

Appendix A, Exhibit 3, Terracon did not observe slopes that would be classified as either a critical or protected slopes. Portions of the topographic maps presented in Appendix A, Exhibit 3 are missing coverage, and may not show portions of the site.

2.7 Task 7: Stream Corridors, Watercourses, and Surface Water Bodies Review

To determine if an area contains a stream corridor, watercourse and/or surface water body (aquatic features), Terracon utilized the most current topographic maps, as well as the FEMA FIRM map that was obtained for the site. Based on review of the Quadrangle map and the FEMA FIRM map, a tributary of Otter Creek was identified on the site, running in a northwest to southeast orientation transecting the southwest corner of the site. The tributary was labeled as an intermittent stream on the Quadrangle map, as depicted by the blue solid and dashed line. Since no floodway was delineated on the FEMA FIRM map, the blue line on the Quadrangle map shall serve as the centerline of a 30-foot wide stream corridor. Based on the classification of the stream, a 30-foot natural buffer shall be established around the stream corridor. The FEMA FIRM map is included in Appendix A, Exhibit 1, and the topographic maps are included in Appendix A, Exhibit 3. Photos of the observed area are included in Appendix D. Portions of the topographic maps presented in Appendix A, Exhibit 3 are missing coverage, and may not show portions of the site.

2.8 Task 8: Wetlands Review

To identify areas that would be classified as wetlands, Terracon performed a Waters of the United States (WOUS) and Wetland Delineation Report (the Report) dated June 8, 2022. Furthermore, Johnson County requests that any identified wetlands be classified in one of three classes based on size, makeup, and habitat. Based on the findings of the report, Terracon observed an on-site wetland and an on-site tributary. The observed wetland exhibited hydric soil, and wetland hydrology characteristics and totaled approximately 0.43 acres. Based on the Johnson County wetland classification system, this wetland would be classified as a Class 3 wetland, and this wetland would require a 50-foot buffer. The wetland exhibits produced from the Report are included in Appendix A, Exhibits 4 and wetland determination forms are included in Appendix E.

Impact to wetlands is only allowed if it is clearly demonstrated that avoiding and minimizing the impact is unreasonable. Impacts must also consider the class of the wetlands. Class 1 wetlands shall not be impacted for any purpose. Class 2 and 3 wetlands shall not be impacted unless for critical or required infrastructure.

The wetland Report for this site previously completed has been submitted to the United States Army Corps of Engineers (USACE) for their official determination.

2.9 Task 9: Woodlands Review

To identify woodland areas on the site, Terracon utilized aerial images in addition to prior site knowledge collected from Terracon's Waters of the United States and Wetland Delineation Report (the Report) dated June 8, 2022 to determine the presence of woodland areas. Based on past site reconnaissance and the review of aerial images, woodlands were not observed on-site. Aerial images are included in Appendix A, Exhibit 2. Site photographs are included in Appendix D.

3.0 CONCLUSIONS

Based on a review of the nine sensitive areas analysis requirements as required by Johnson County, no sensitive area features were identified with the exceptions of a class 3 wetland and an unnamed tributary.

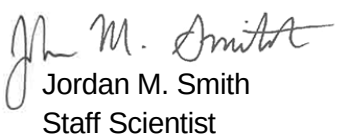
The wetland exhibited hydric soil, wetland hydrology characteristics and totaled approximately 0.43 acres. Based on the Johnson County wetland classification system, this wetland would be classified as a Class 3 wetland and would require a 50-foot buffer. The wetland exhibits produced from the Report are included in Appendix A, Exhibit 4 and the wetland determination forms are included in Appendix E.

The unnamed tributary was observed running in a northwest to southeast orientation, transecting the southwest corner of the site The tributary was labeled as an intermittent stream on the Quadrangle map, as depicted by the blue solid and dashed line. Since no floodway was delineated on the FEMA FIRM map, the blue line on the Quadrangle map shall serve as the centerline of a 30-foot wide stream corridor. Based on the classification of the stream, a 30-foot natural buffer shall be established around the stream corridor.
At this time, there are no planned impacts to the identified sensitive areas. The preliminary plans show an access road transecting the southwest portion of the site along the apparent wetland and stream. However, at this time, it is planned that this access road is outside of both of the applicable buffers for the wetland and stream. The buffers and area of disturbance can be seen on Exhibits 4 and 5 in Appendix A.

4.0 CLOSING

Terracon appreciates the opportunity to provide services on this important project. Please feel free to contact Jordan Smith if you have any questions or require additional information.

Sincerely,
Terracon Consultants, Inc.

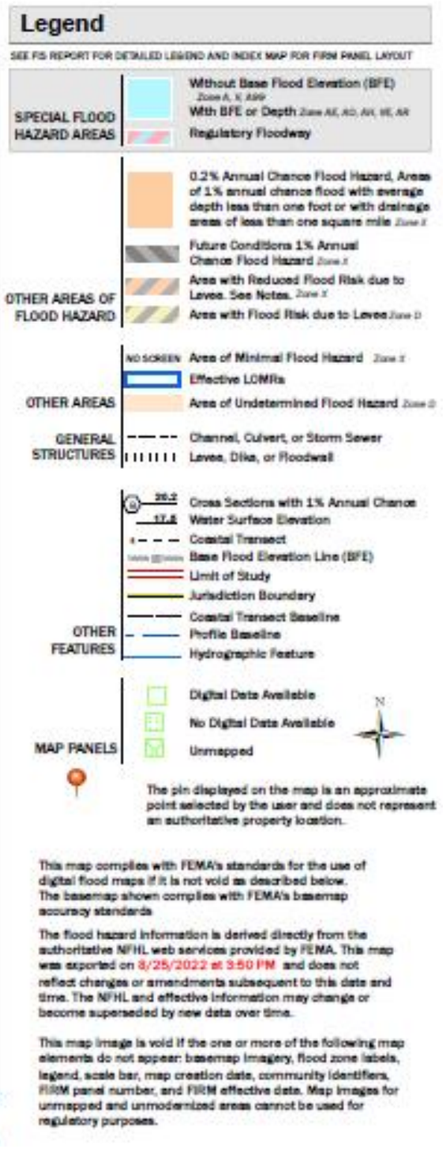


Jordan M. Smith
Staff Scientist

Tim V. Capps
Group Manager

APPENDIX A
Exhibits

National Flood Hazard Layer FIRMette



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Drawn by:	JMS
Checked by:	TC
Approved by:	TC
Scale:	NA.
File Name:	Exhibits
Date:	Sep. 2022

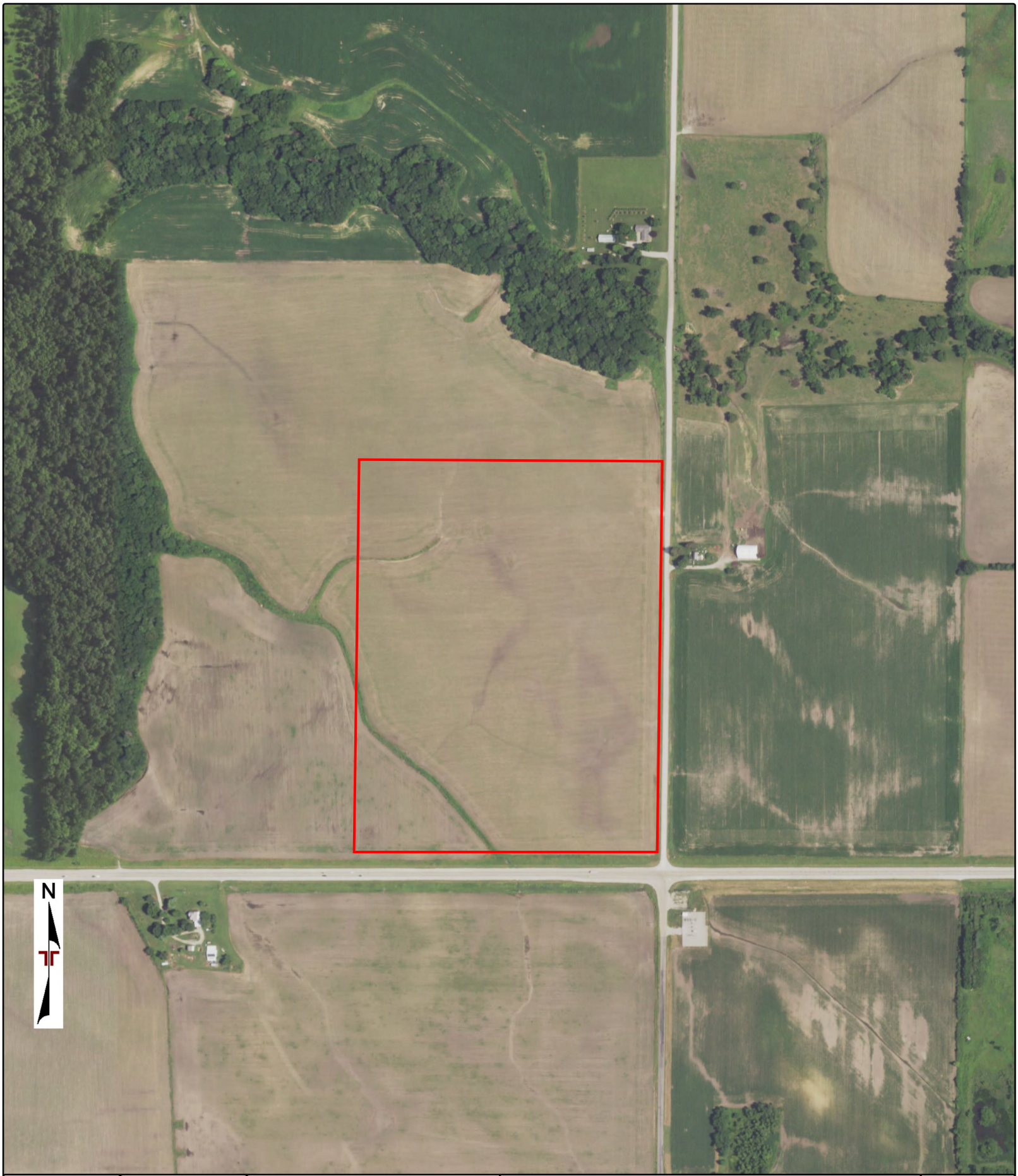
Terracon
Consulting Engineers & Scientists
2640 12th Street SW Cedar Rapids, Iowa 52404
PH. (319) 366-8321 FAX. (319) 366-0032

FEMA FIRM Map

Conifer Power Sensitive Areas Analysis
Highway 22
Lone Tree, Iowa

Exhibit

1



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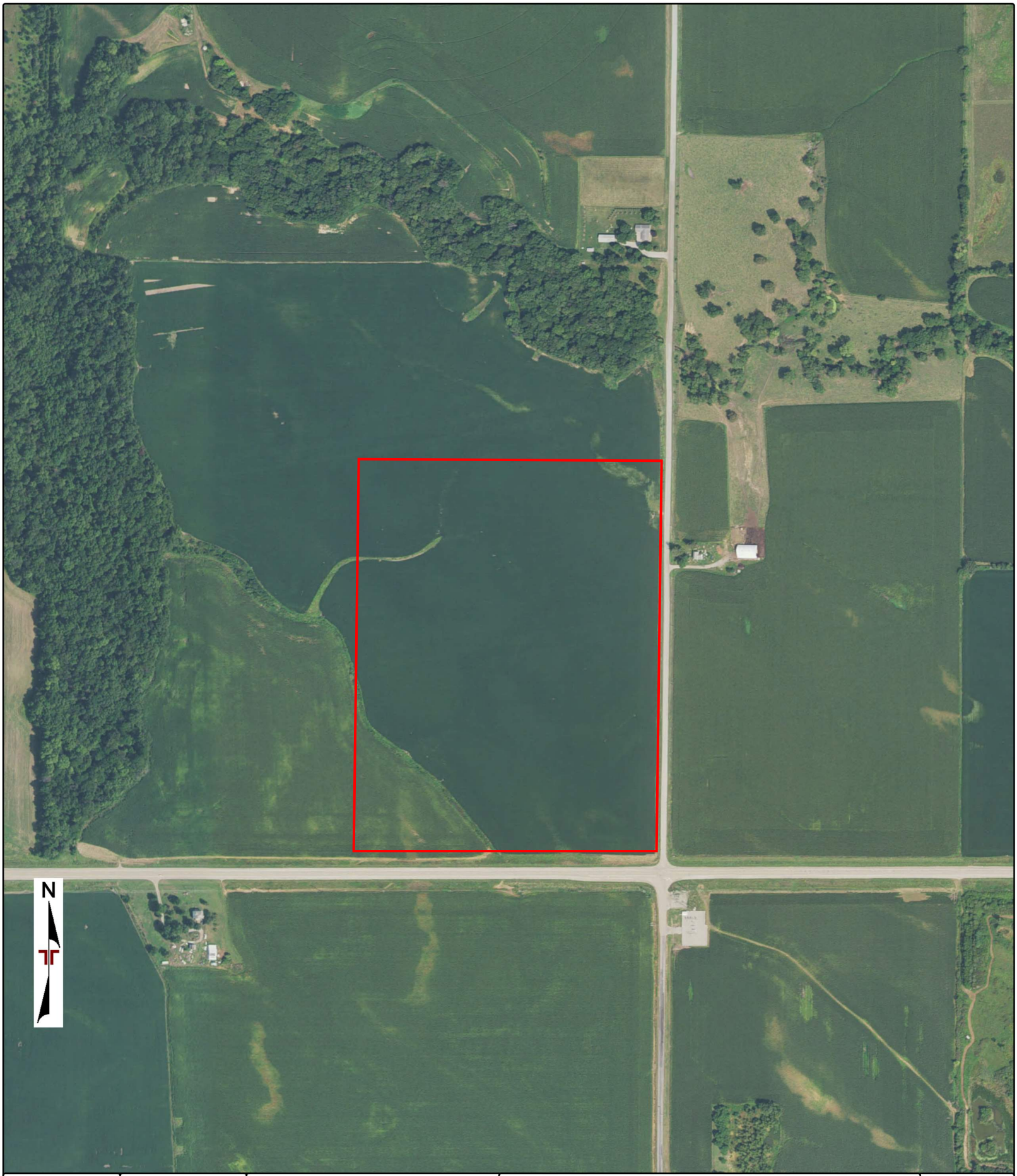

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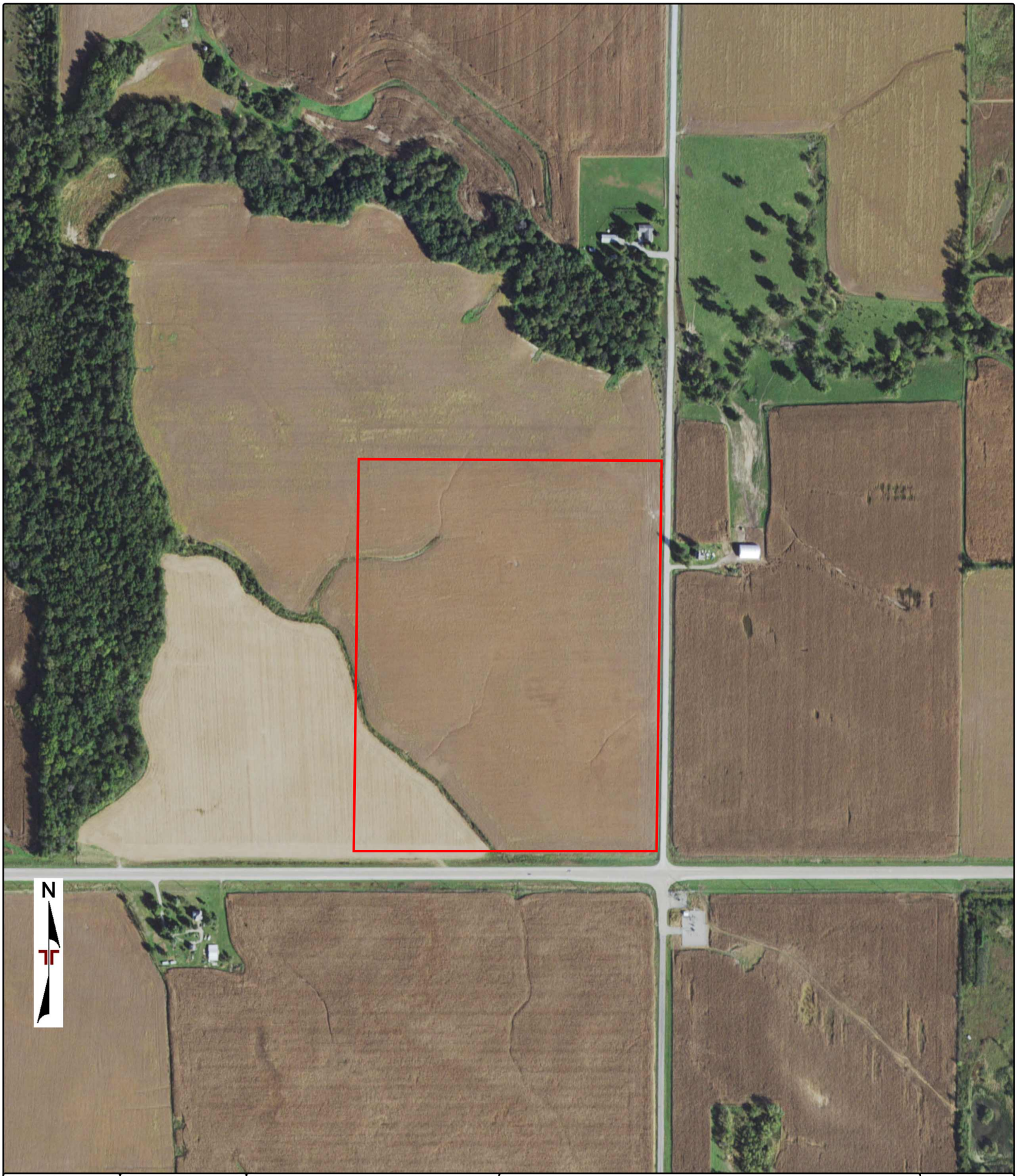

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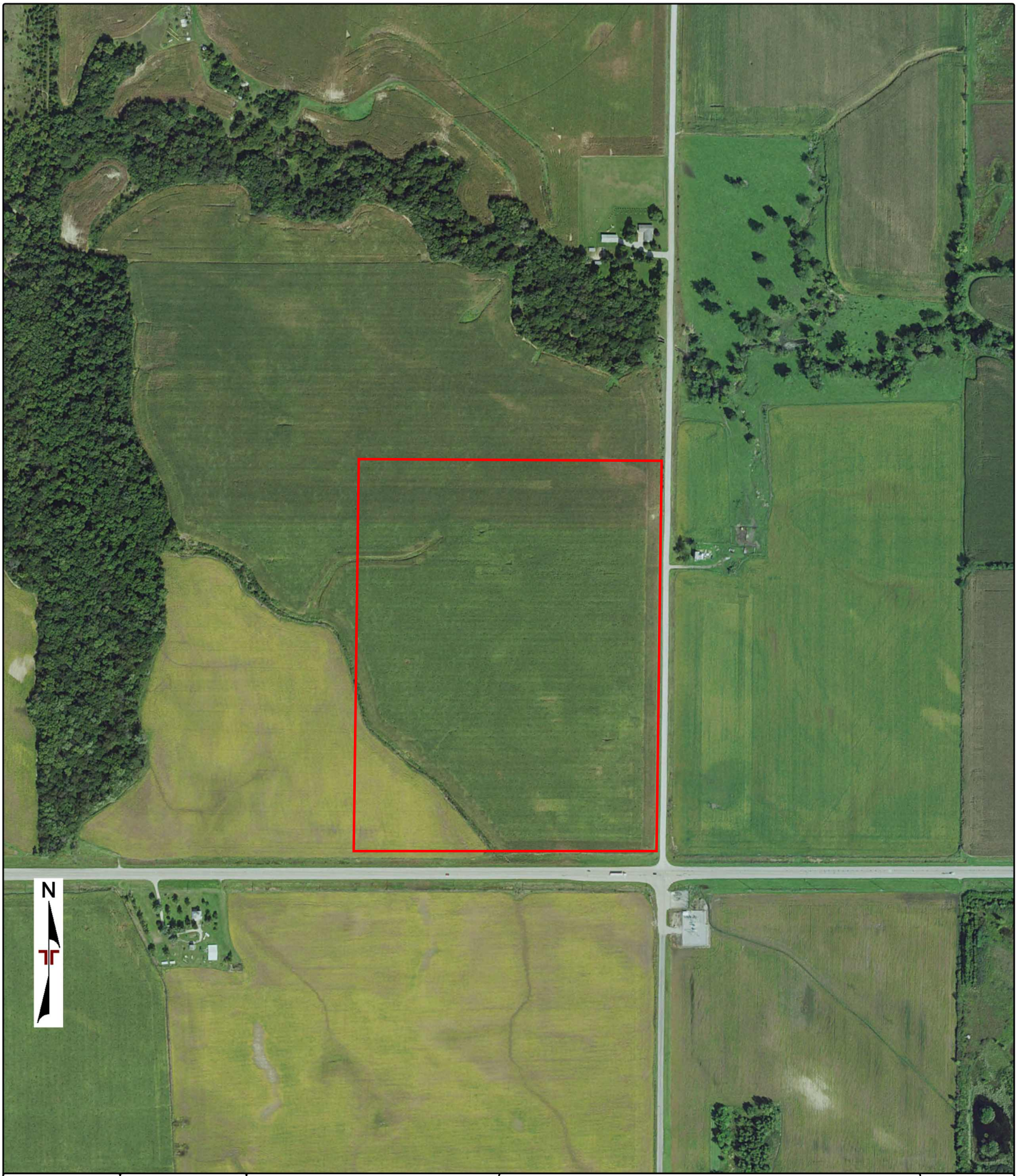

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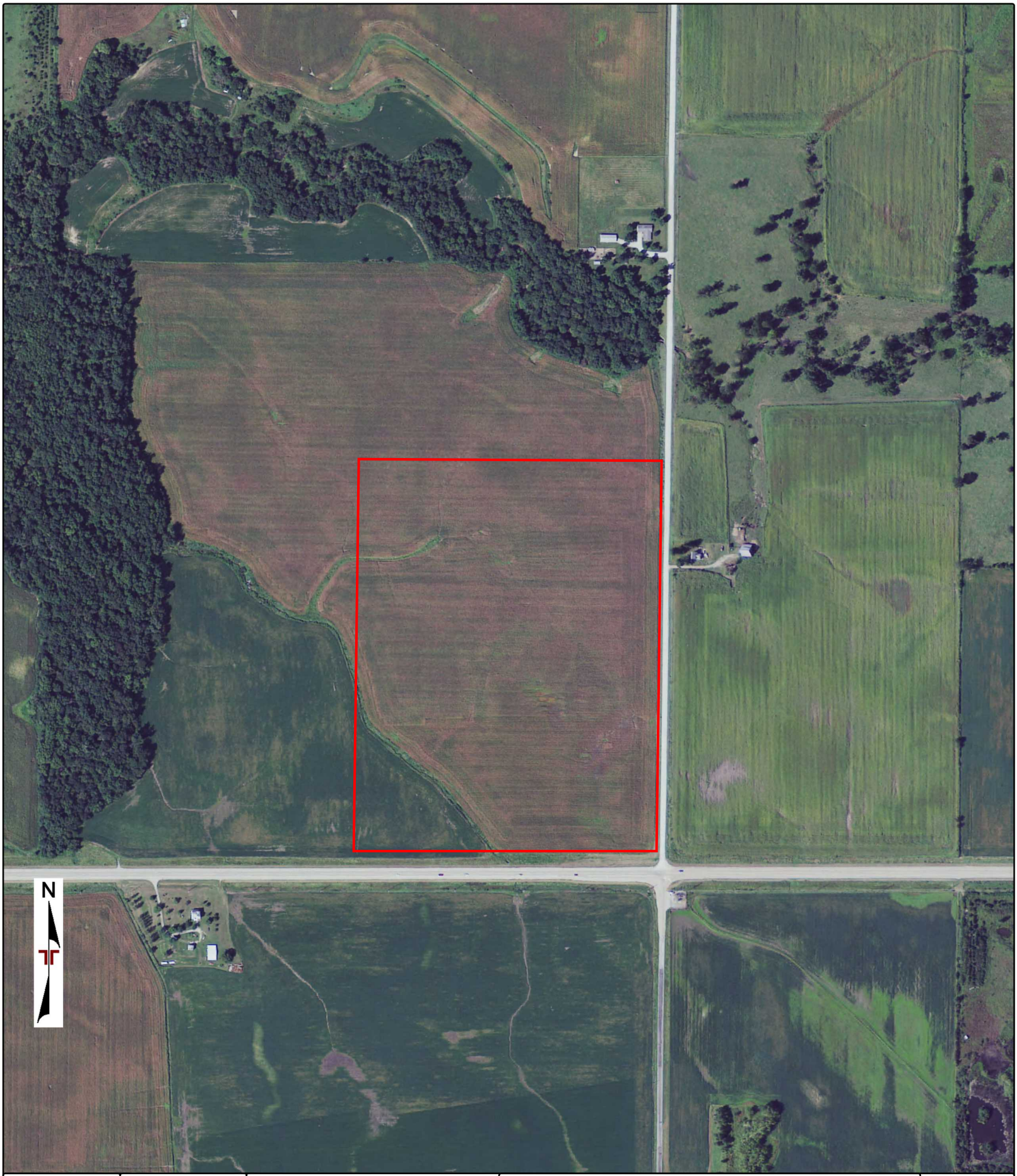

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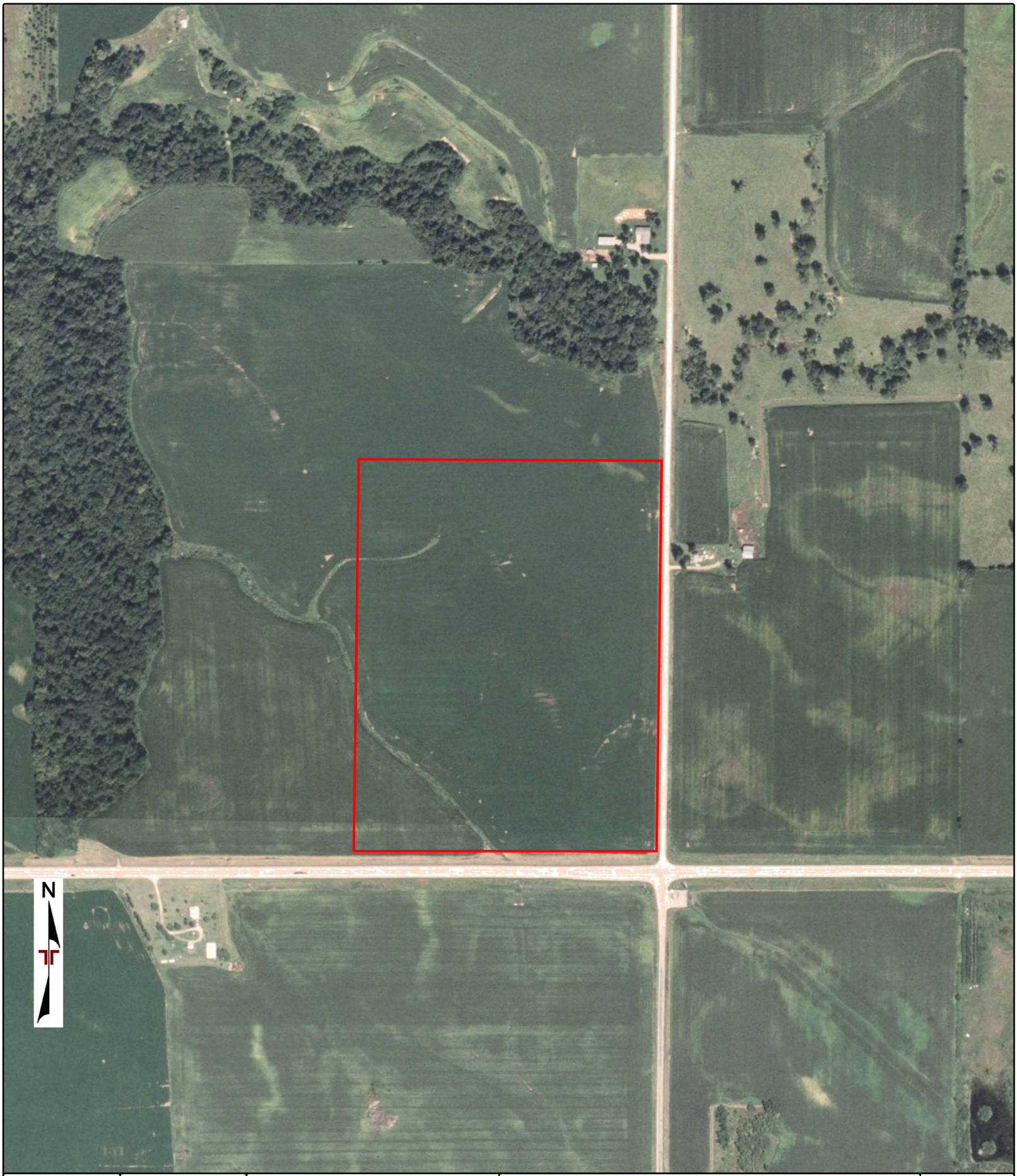

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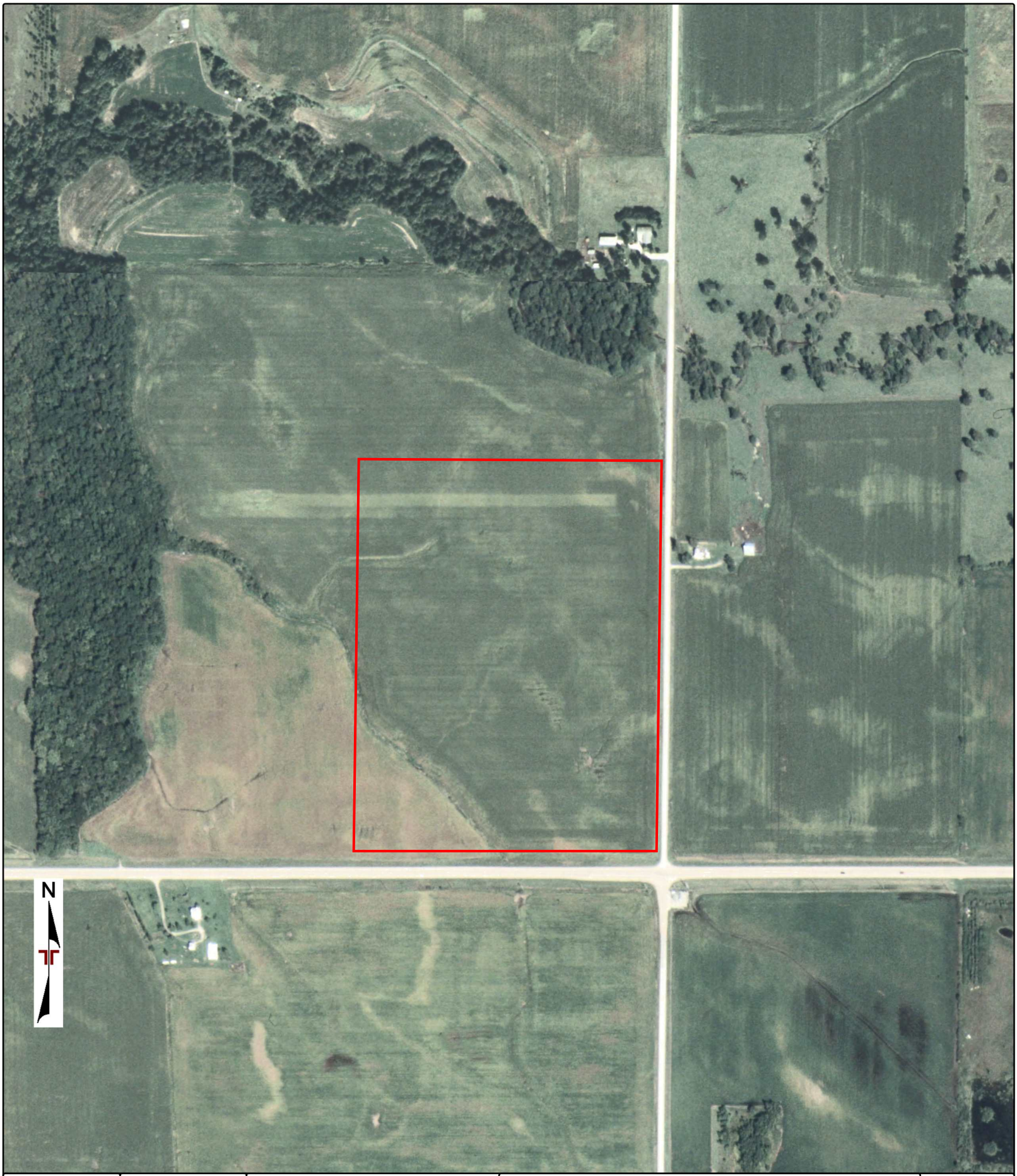

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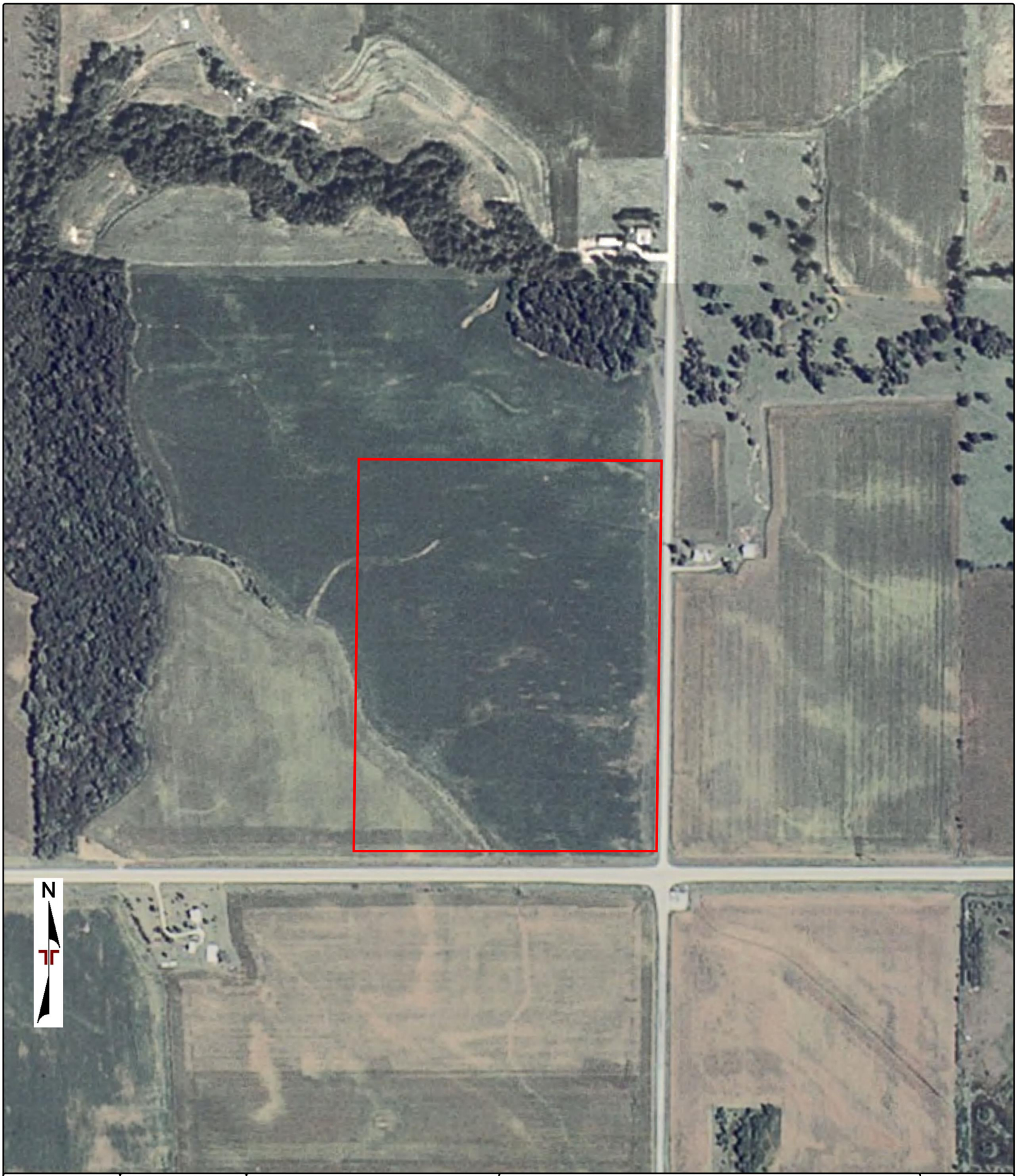

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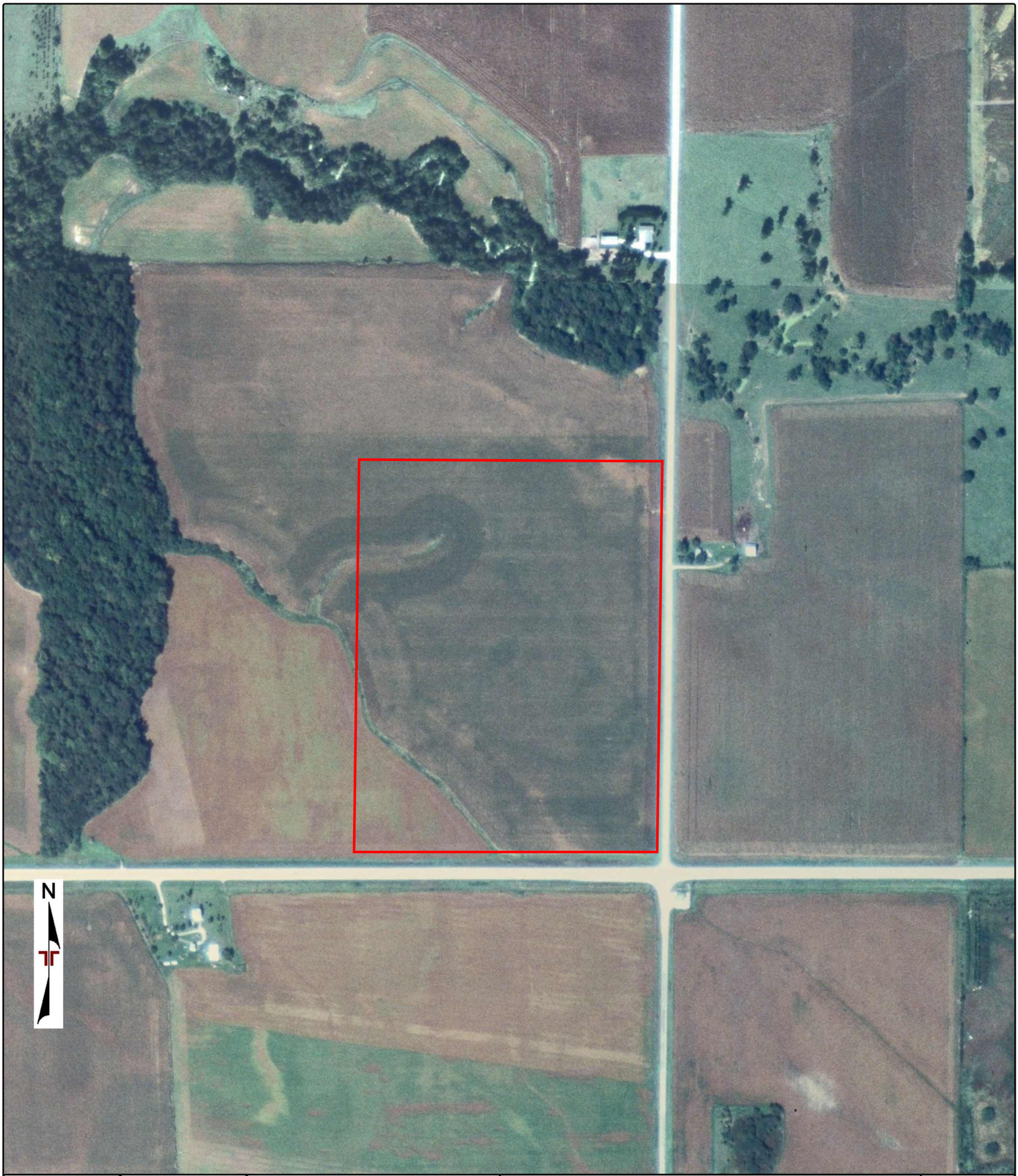

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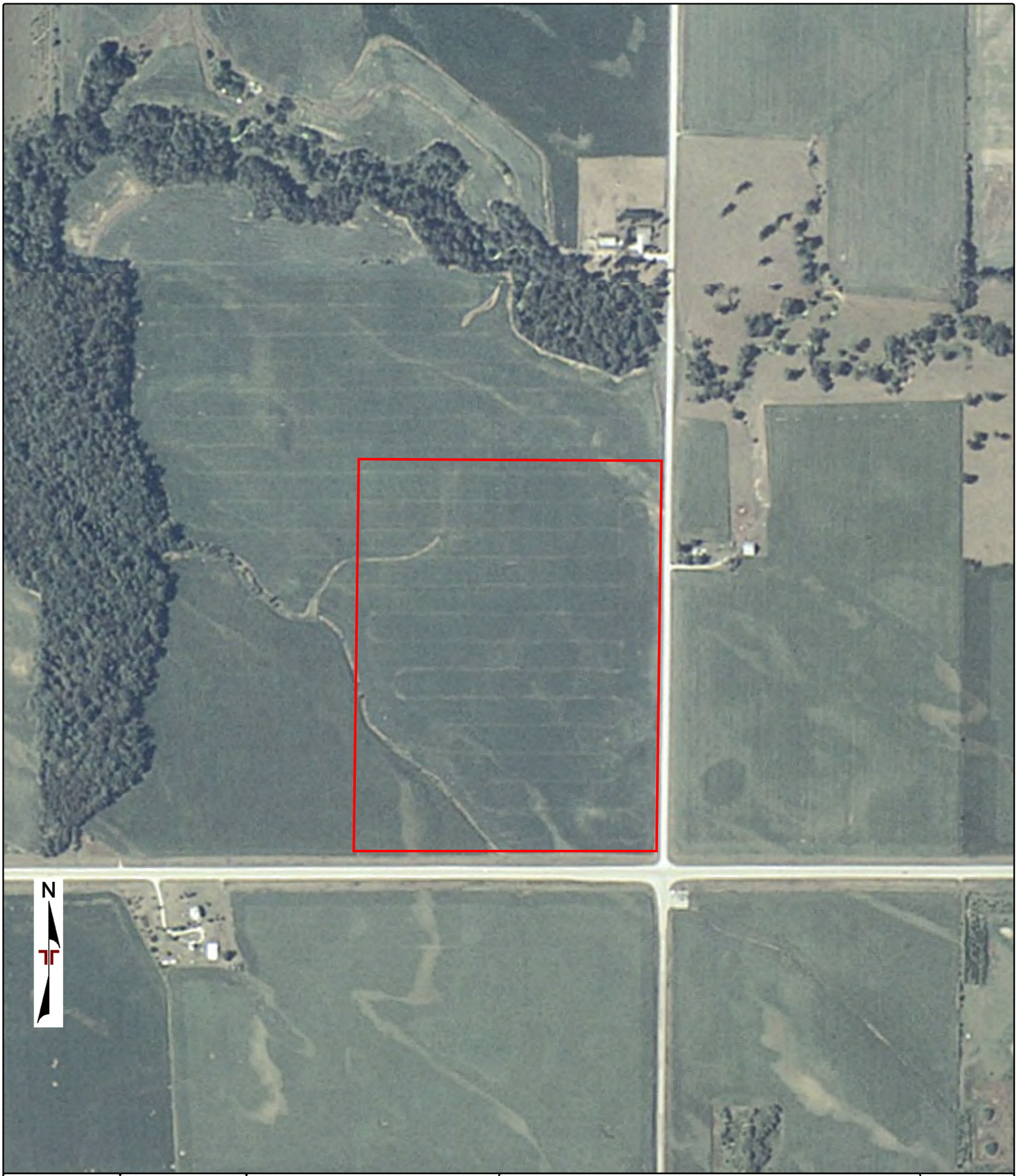

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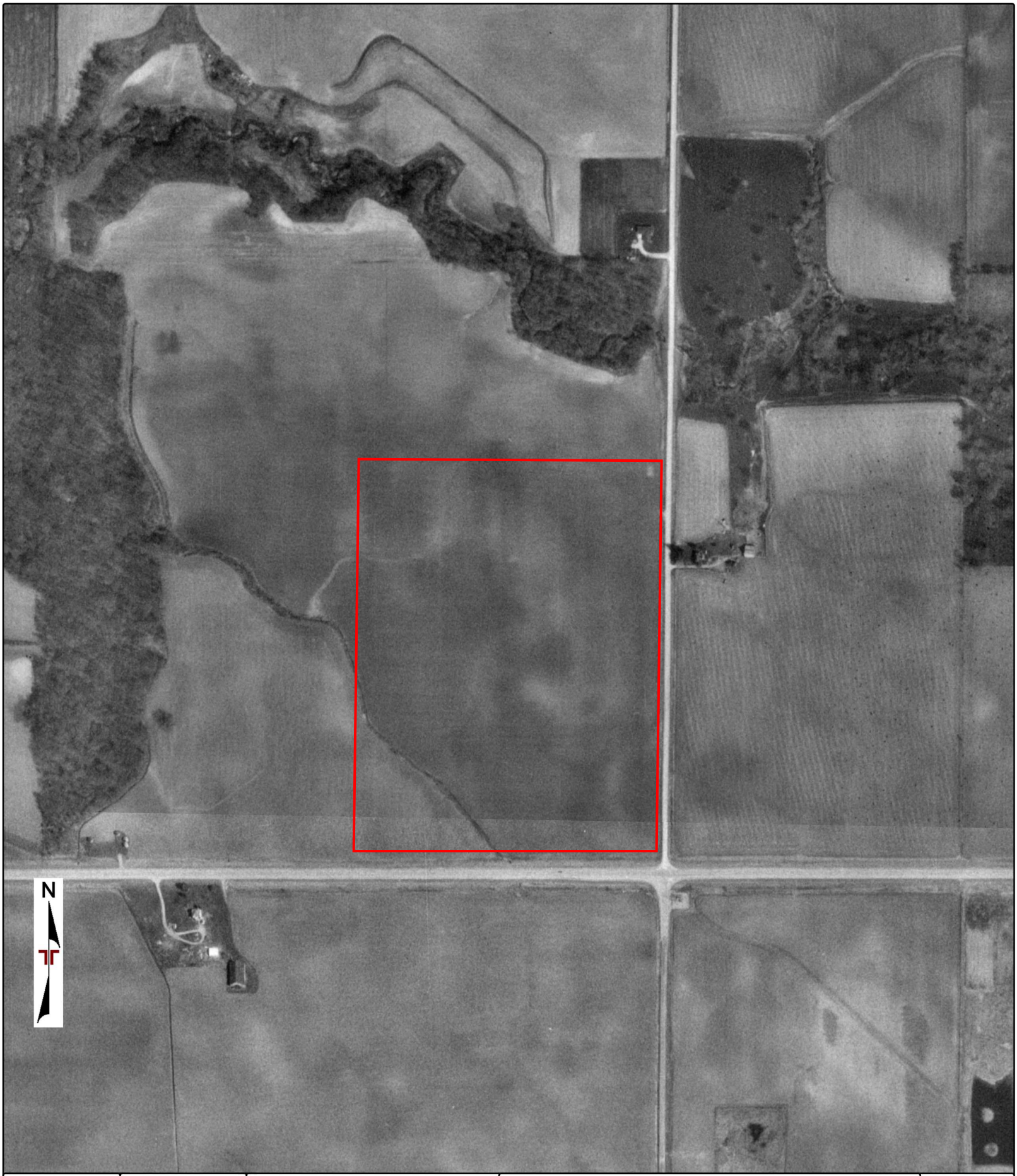

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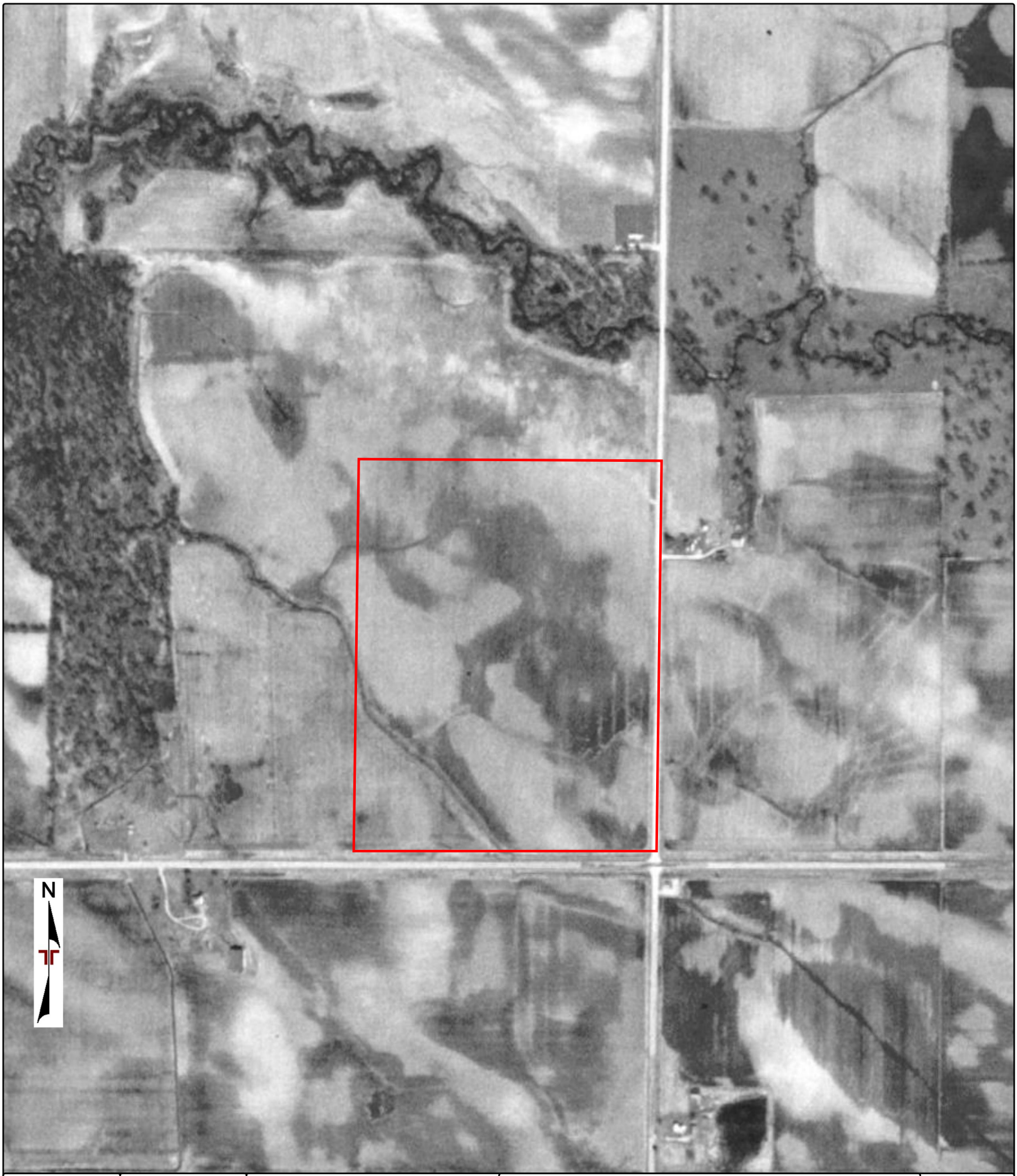

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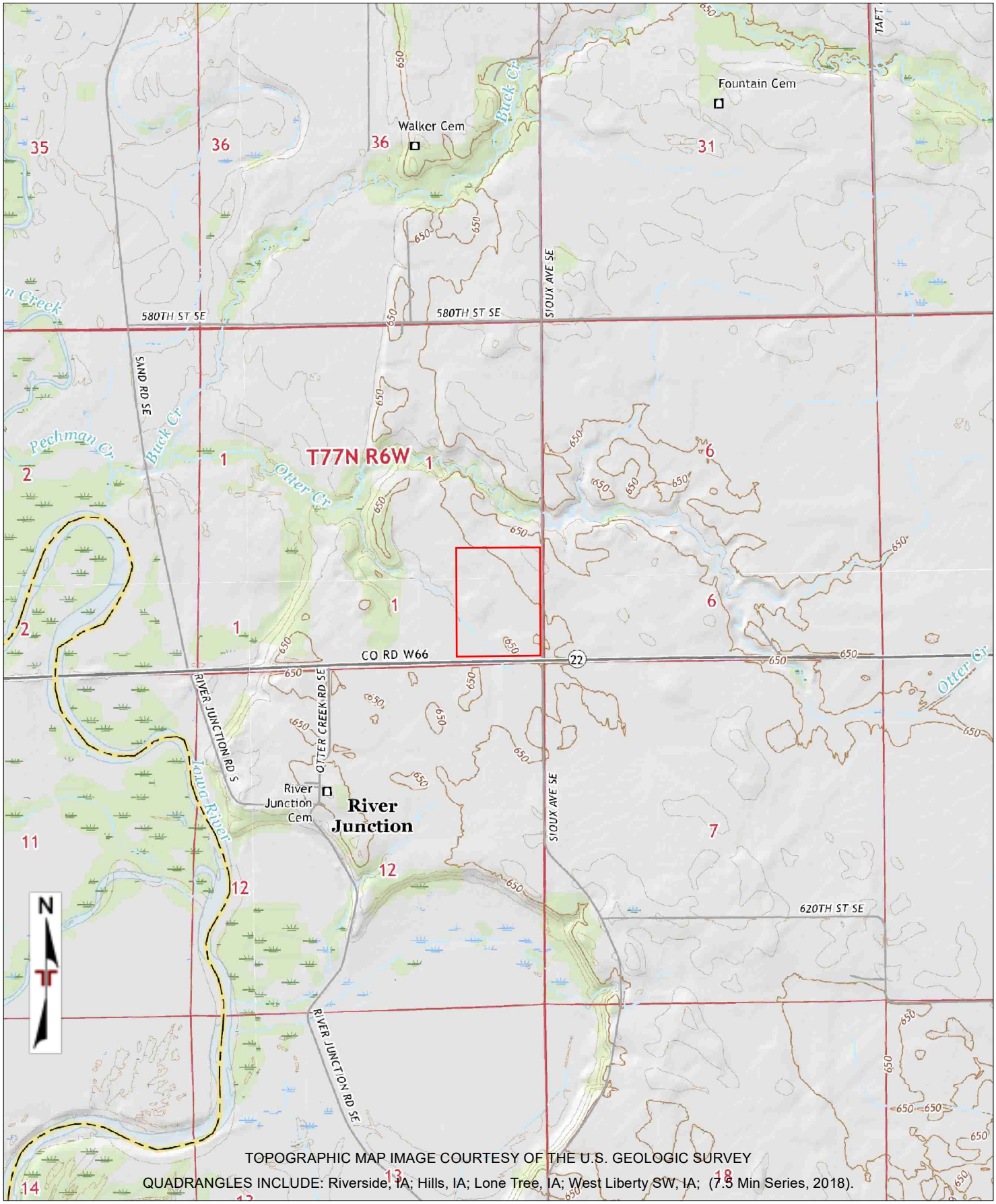

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGIC SURVEY

QUADRANGLES INCLUDE: Riverside, IA; Hills, IA; Lone Tree, IA; West Liberty SW, IA; (7.5 Min Series, 2018).

Project Manager:	**Project No:** 06227049	Terracon 2640 12th St SW Cedar Rapids, Iowa 52404	TOPOGRAPHIC MAP (2018)	Exhibit
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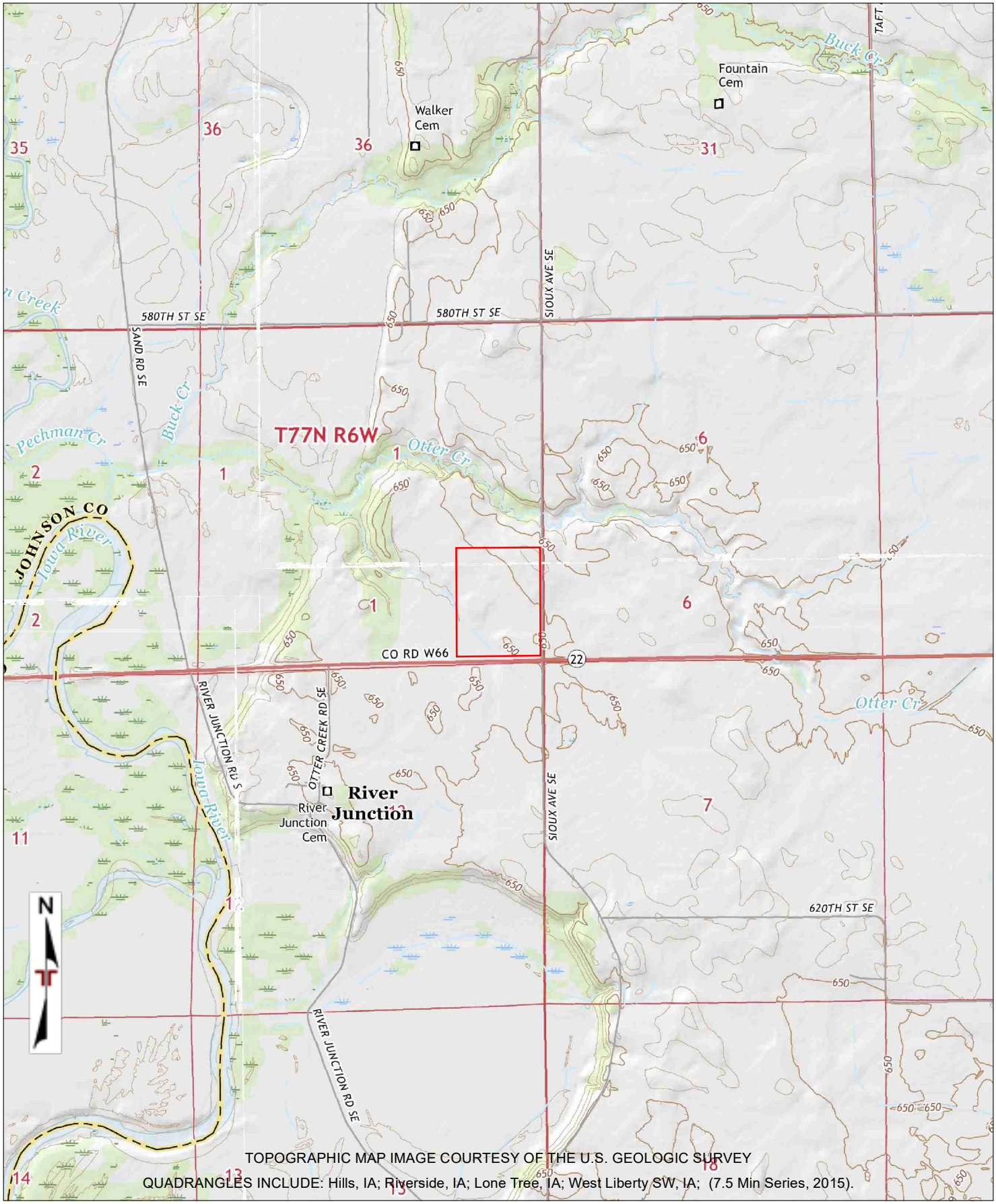

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Project Manager:	**Project No:** 06227049	Terracon 2640 12th St SW Cedar Rapids, Iowa 52404	TOPOGRAPHIC MAP (2015)	Exhibit
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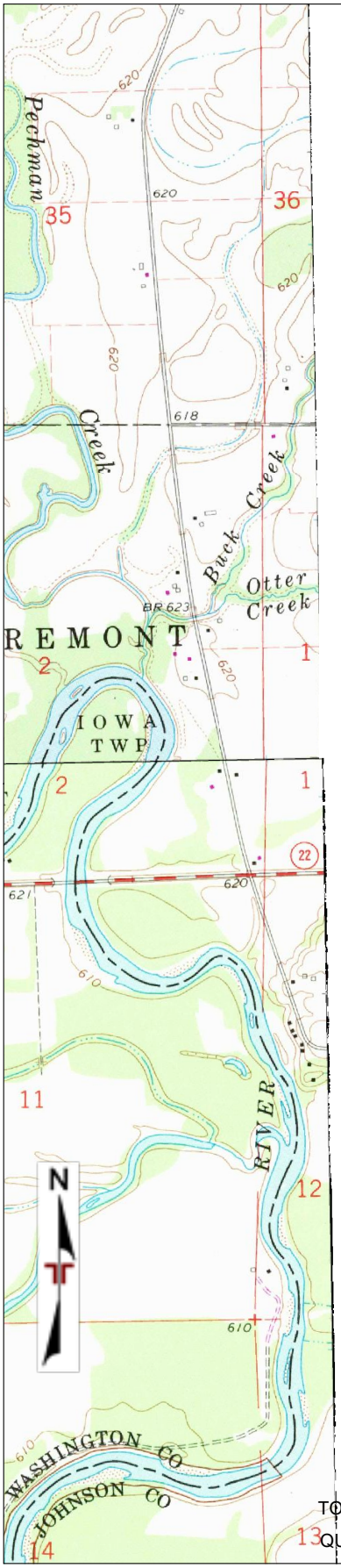

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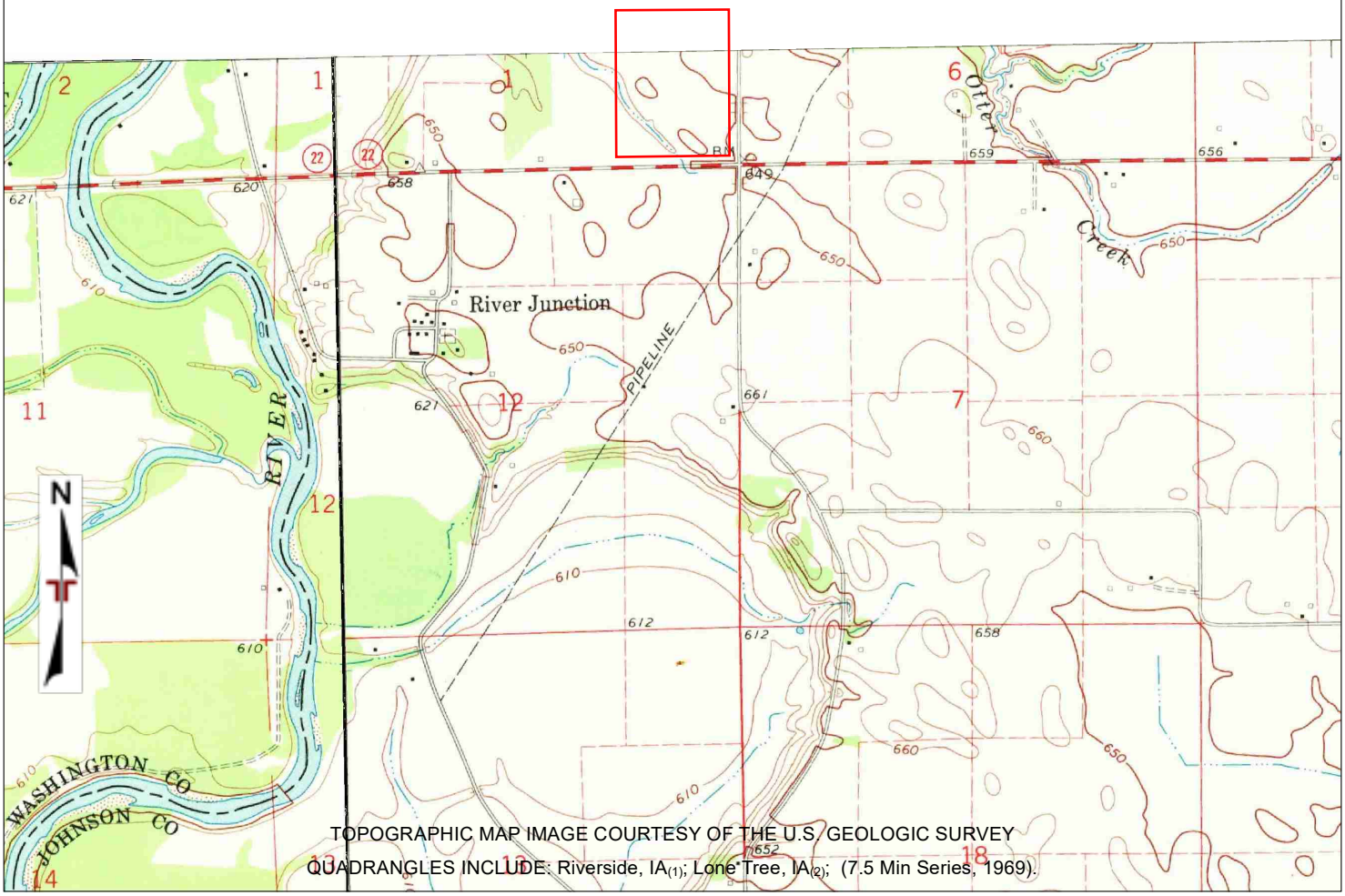

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QUADRANGLES INCLUDE: Riverside, $IA_{(1)}$; Lone Tree, $IA_{(2)}$; (7.5 Min Series, 1969).

Project Manager:	**Project No:** 06227049
Drawn By:	**Scale:** 1" = 2000'
Checked By:	**File Name:** 22042000035
Approved By:	**Date:** 2022-04-20

Terracon

2640 12th St SW
Cedar Rapids, Iowa 52404

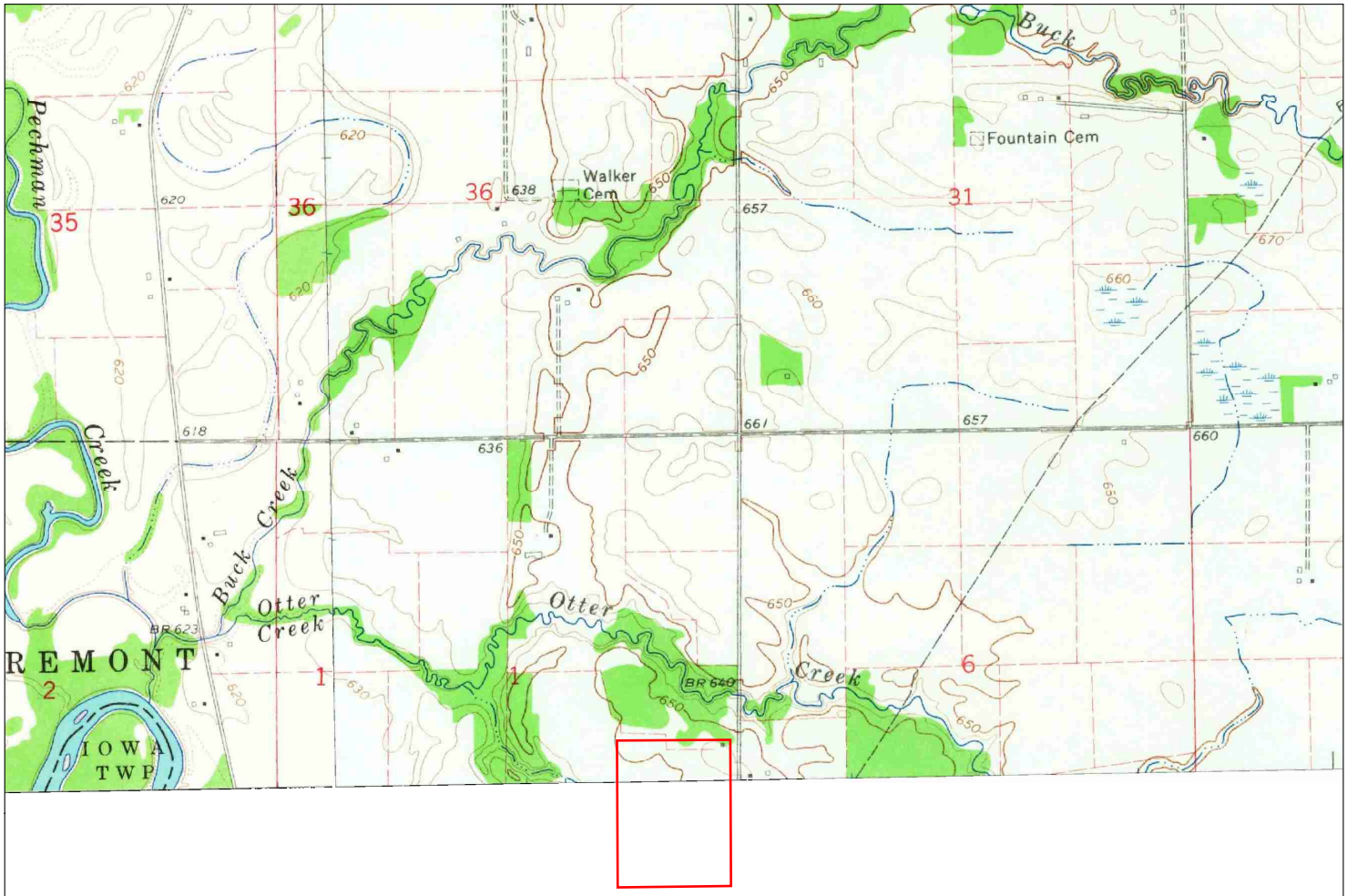
TOPOGRAPHIC MAP (1969)

Lone Tree Site

Parcel 1801476001, Iowa

Exhibit

3



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TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGIC SURVEY

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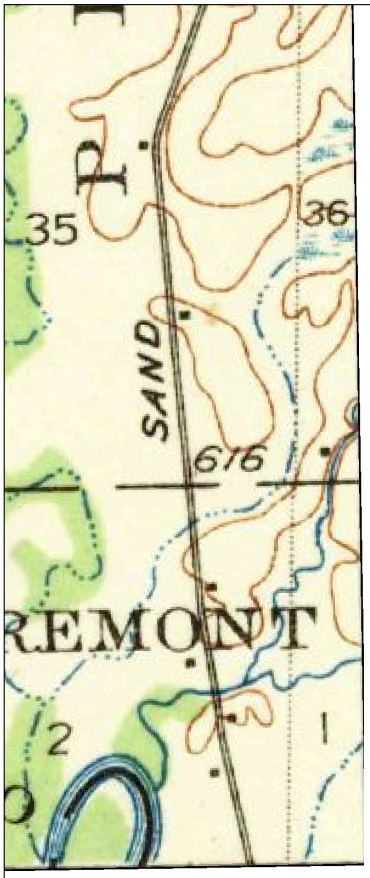

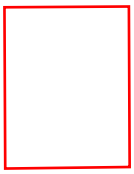

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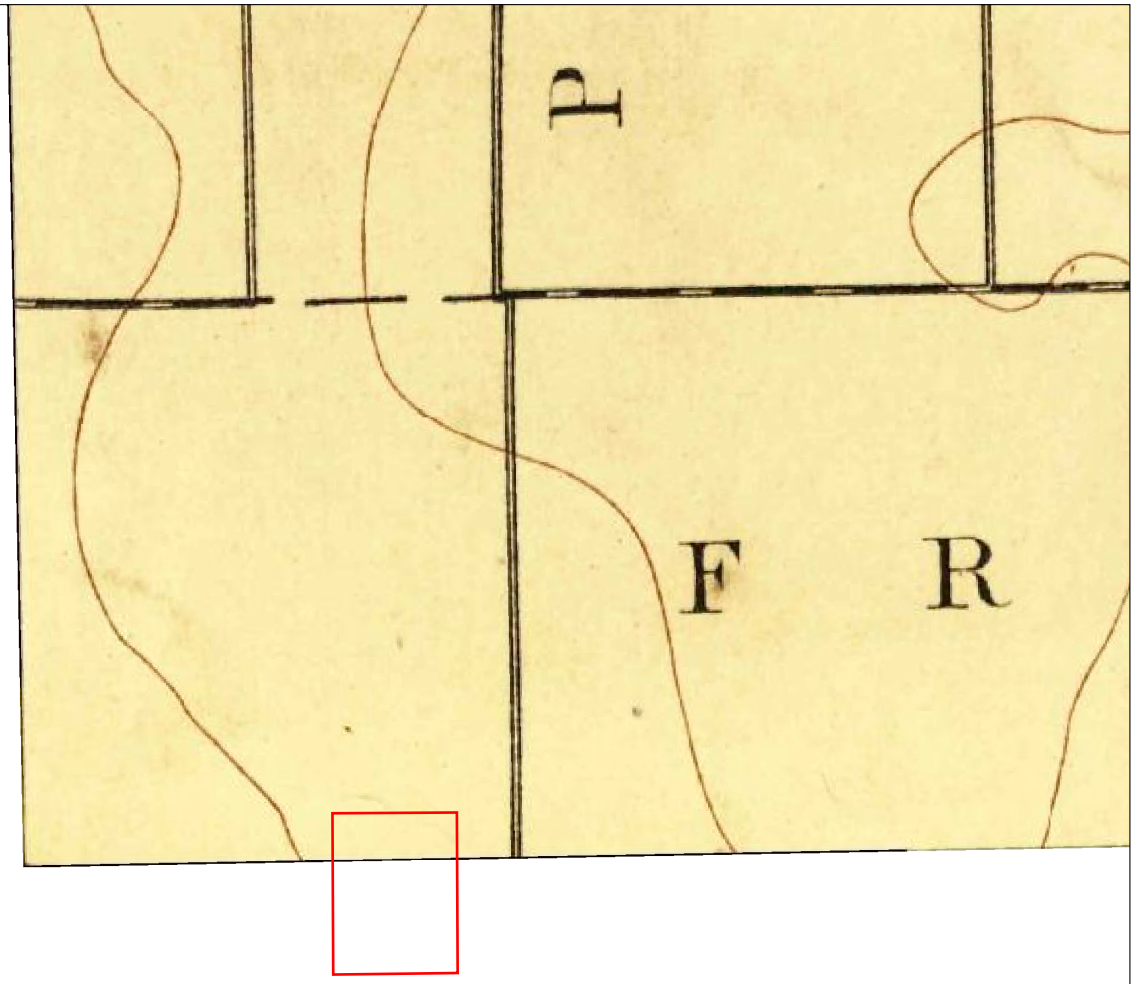

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TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGIC SURVEY

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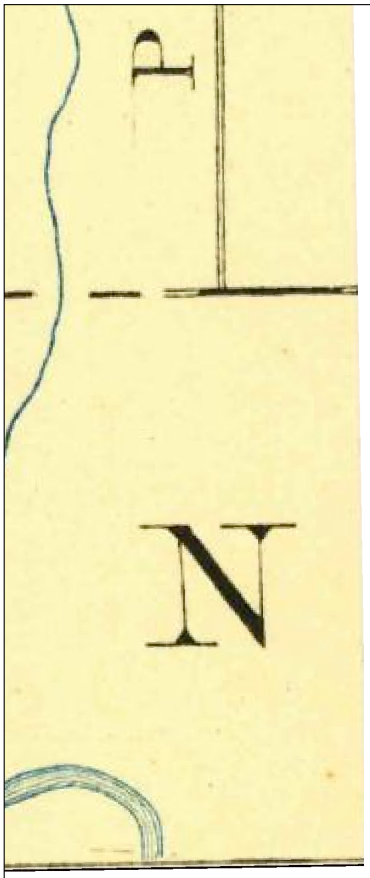
Checked By:	**File Name:** 22042000035			
Approved By:	**Date:** 2022-04-20			



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGIC SURVEY

QUADRANGLES INCLUDE: Iowa City, IA; (15 Min Series, 1891).

Project Manager:	**Project No:** 06227049	Terracon 2640 12th St SW Cedar Rapids, Iowa 52404	TOPOGRAPHIC MAP (1891)	Exhibit
Drawn By:	**Scale:** 1" = 2000'		Lone Tree Site Parcel 1801476001, Iowa	3
Checked By:	**File Name:** 22042000035			
Approved By:	**Date:** 2022-04-20			

LEGEND

- BOUNDARY OF ASSESSED AREA
- WATERS OF THE U.S. (WUS)
- WETLAND AREA
- DATA POINT LOCATION
- PHOTO LOCATION & DIRECTION

AERIAL PHOTO FROM BING MAPS

NORTH

0 200'

APPROXIMATE DRAWING SCALE

Project No.	06227049-2.2
Date:	12/22/22
Project Mngr:	JMS
Drawn By:	KEK
File Name:	06227049-2.2.dwg
Layout Name:	E5

Terracon
2640 12TH STREET SW CEDAR RAPIDS, IOWA 52404
PH. (319) 366-8321 FAX. (319) 366-0032

SENSITIVE AREAS MAP

CONIFER POWER WETLANDS
CONIFER POWER
HIGHWAY 22
LONE TREE, IOWA

EXHIBIT

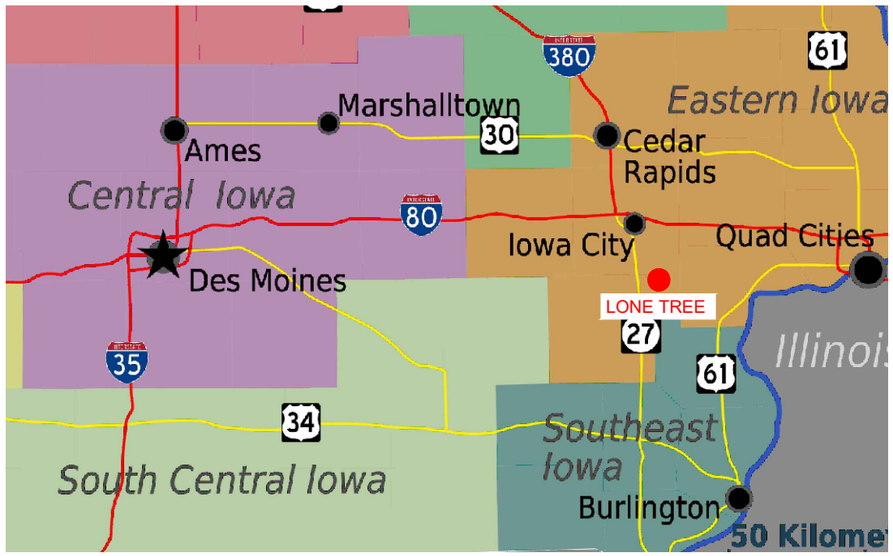
5

LONE TREE PROJECT

Lone Tree, IOWA

SITE PLAN

Lone Tree Solar Project				
MW ac	MW dc	ratio	MWh/y	Acres
10,00	11,81	1,18	20209	50



Contact Information			
Mariano Brandi	CEO	mbrandi@pcr.energy	PCR US Houston Office (832) 955 1979 – 1334 Brittmoore Rd, Suit 2407 Houston, TX 77043 – www.pcr.energy/en
Cynthia Schuchner	Chief Construction and Engineering Officer	cschuchner@pcr.energy	PCR US Houston Office (832) 955 1979 – 1334 Brittmoore Rd, Suit 2407 Houston, TX 77043 – www.pcr.energy/en

Rev.	Date (MM/DD/YY)	COMMENTS
04		
03	12/15/22	Access update
02	11/02/22	PVcase update
01	08/11/22	Georef update
00	06/14/22	Preliminary

REVISIONS

PCR

Project:	LONE TREE		
Sector:	JOHNSON, IOWA, USA		
Owner:	PCR INVESTMENTS SP2 LLC		
Title:	SITE PLAN	Sheet:	01/07
Utility:	CIPCO	Scale	Rev:
File:	Site Plan Lone Tree.dwg		

POINT	LAT	LONG
A	41,49670229	-91,48829677
B	41,49670967	-91,48362429
C	41,49698140	-91,48355875
D	41,50132142	-91,48348547
E	41,50131371	-91,48821947

Boundaries (aprox. 50ac)

1V54 Tracker

1V27 Tracker

MV Station

MV Underground cable 12.47 kV

Wetlands

Internal Roads

SOLAR PANEL	
Brand	ZNshine Solar
Model	ZXM7-SHLDD-144-550
Power	550 Wp - Bifacial
Dimensions (W x L x D)	1134 x 2278 x 30 mm
INVERTER	
Brand	SMA
Model	Sunny Highpower SHP125-US-20-PEAK3
Power	125 kW
Output Voltage	480 V
LV Cables (INV - TR)	
Model	EXZHELLENT COMPACT 1000V Prysmian
Type	0,6/1, 1kV Cu 3x2/0AWG XLPE
Section	2/0 AWG
Rate Current	167 A
R	0,16 ohm/km
V/A km	0.34
MV Cables (TR - SW)	
Type*	12.5 kV Al 3x1x250MCM XLPE
Section*	250 MCM
Rate Current MVS 1|2|3|4	120|240|360|480 A
R	0,568 ohm/km
X	0,194 ohm/km
B	0,156 mF/km
Length MV 1|2|3|4	444|443|416|47 ft
COMPONENTS	
Total Inverters	84
Total Trackers 1 | 2	361 | 73
Total Modules	21465

*NOTE: MV Underground Cable Gauge TBD

Rev.	Date (MM/DD/YY)	COMMENTS
04		
03	12/15/22	Access update
02	11/02/22	PVcase update
01	08/11/22	Georef update
00	06/14/22	Preliminary

REVISIONS

JPCR

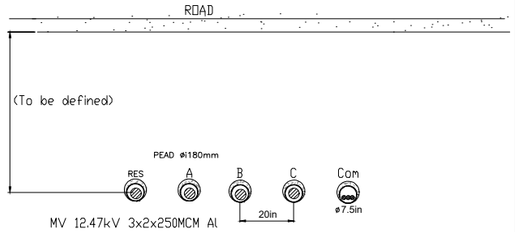
Project:	LONE TREE		
Sector:	JOHNSON, IOWA, USA		
Owner:	PCR INVESTMENTS SP2 LLC		
Title:	SITE PLAN	Sheet:	02/07
Utility:	CIPCO	Scale	Rev:
File:	Site Plan Lone Tree.dwg		

MV Cables (Interconnection)	
Type*	12.5kV Al 3x2x250MCM XLPE
Section*	250 MCM
Rate Current	480 A
R	0,211 ohm/km
X	0,175 ohm/km
B	0,212 mF/km
Length	0.18 miles
Power Factor @POI	**95%**

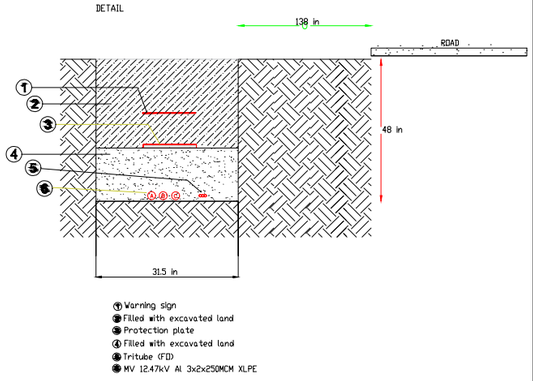
Boundaries Lone Tree CIPCO

MV Underground cable 12.47 kV

DETAIL - ROAD CROSS



DETAIL



*NOTE: MV Underground Cable Gauge TBD

Rev.	Date (MM/DD/YY)	COMMENTS
04		
03	12/15/22	Access update
02	11/02/22	PVcase update
01	08/11/22	Georef update
00	06/14/22	Preliminary

REVISIONS

Project:	LONE TREE
Sector:	JOHNSON, IOWA, USA
Owner:	PCR INVESTMENTS SP2 LLC
Title:	SITE PLAN
Sheet:	03/07
Utility:	CIPCO
Scale	
Rev:	
File:	Site Plan Lone Tree.dwg

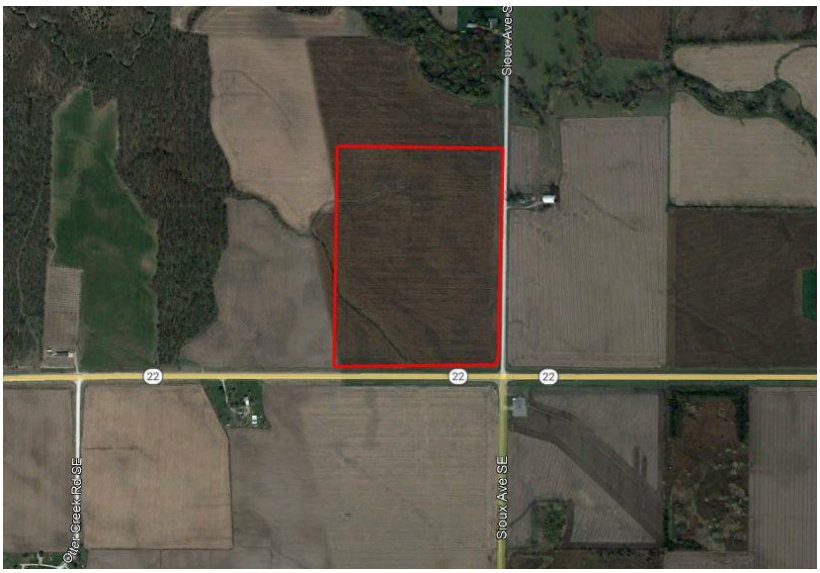
APPENDIX B
Historical Reports

Desktop Cultural Resources Assessment

Lone Tree Site
Iowa Highway 22 and Sioux Avenue SE
Johnson County, Iowa

April 29, 2022

Terracon Project No. 06227049, Task 2.4



Prepared for:
PCR US Investments Corporation
Houston, Texas

Prepared by:
Caitlin Gulihur, MA, RPA
Terracon Consultants, Inc.
Austin, Texas

Desktop Cultural Resources Assessment
Lone Tree Site
Johnson County, Iowa
Terracon Project No. 06227049, Task 2.4
April 29, 2022

Introduction

Terracon Consultants, Inc. (Terracon) was retained by Conifer Power Company (Conifer) on behalf of PCR US Investments Corporation (client) to perform a desktop cultural resources assessment on an approximate 36.4-acre parcel located in Johnson County, northeast of River Junction, Iowa (Exhibits 1 and 2). This report has been prepared in accordance with our proposal dated March 31, 2022. It is Terracon's understanding that the project area is privately owned, and that the proposed project will be carried out with private funds.

As discussed below, the purpose of Terracon's review is to assist the client in evaluating and complying with requirements relative to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations (Title 36 Code of Federal Regulations Part 800). This report is a desktop review of the project with regards to potential impacts to recorded historic properties, is based solely on research and was not informed by archaeological fieldwork.

Project Description and Area of Potential Effect

Terracon understands that the Client and Conifer are preparing preliminary plans to develop the project area with approximate 10-megawatt solar facilities. The proposed project will include a Gen-tie route, which is currently not identified. The project area is located northeast of River Junction, Iowa, in Johnson County, Township 77N, Range 6W, Section 1. For the purposes of the current desktop review, the total area of the potential ground disturbances is considered as the area of potential effect (APE). The total area of the APE is approximately 36.4 acres for the proposed solar facilities (see Exhibits 1 and 2). The project area is currently an undeveloped agricultural field.

Environmental Context

The project area is located within the Upper Mississippi Alluvial Plain (72d) Level IV ecoregion, characterized by smooth to irregular alluvial plains (Chapman et al. 2002). The vegetation of this ecoregion was historically a mix of oak-hickory forests and tallgrass prairie; however, the majority of the ecoregion is currently used as cropland. In general terms, the project area is located in a rural environment, and consists of an undeveloped tract.

Bedrock geology of the project area is mapped as Famennian Formations (Df), consisting of shale, siltstone, and dolomite (Witzke et al. 2010).

Although agricultural in nature, county soil surveys provide a description of soil characteristics, including depth, color, inclusions, etc., which can be used to elucidate formation processes and environmental characteristics. Eight soils are mapped in the APE (Exhibit 3; USDA NRCS 2022).

Table 1. Soil Survey Data in APE.

Soil or Series Name	Drainage	Soil Depth	Associated Landform
Tama silt loam, 2 to 5 percent slopes (175B)	Well drained	60 inches to bedrock	Summit, shoulder, and backslope of interfluves
Sperry silt loam, depressional, 0 to 1 percent slopes (122)	Poorly drained	78 inches to bedrock	Summits of interfluves
Walford silt loam, 0 to 2 percent slopes (160)	Poorly drained	80 inches to bedrock	Summits of interfluves
Dickinson fine sandy loam, 2 to 5 percent slopes (175B)	Well drained	60 inches to bedrock	Summit, shoulder, and backslope of dunes
Atterberry silt loam, 1 to 3 percent slopes (291)	Somewhat poorly drained	60 inches to bedrock	Summits of interfluves
Downs silt loam, till plain, 2 to 5 percent slopes (M162B)	Well drained	60 inches to bedrock	Summits and shoulders of interfluves
Downs silt loam, till plain, 5 to 9 percent slopes (M162C)	Well drained	60 inches to bedrock	Summits and shoulders of interfluves
Downs silt loam, till plain, 5 to 9 percent slopes, eroded (M162C2)	Well drained	60 inches to bedrock	Summits and shoulders of interfluves

Site Records and Literature Review

The National Register of Historic Places (NRHP) and ISites Public Data Web Map databases informed this records review. In addition, the Office of the State Archaeologist (OSA) was contacted on April 25, 2022, to request a Site File Search. The State Historical Society of Iowa was contacted for information regarding historical resources within one mile of the APE (Berry Bennett, personal communication 2022). Properties and/or districts listed on the NRHP were not located within the APE or within the 1-mile search buffer. Walker Park and Memorial Building located in River Junction was nominated to the NRHP, but the nomination was not completed,

and the resource is not listed. The River Junction Cemetery has not been evaluated for NRHP eligibility. In addition to these resources, the OSA had the Old River Junction Bridge from the Notable Locations Database and Abraham Owen Stumptown from the Historic Indian Locations Database mapped within one mile of the APE. These features are not located within or adjacent to the APE, and are not recorded as archaeological sites, but are considered to be locations with potential historical and/or archaeological value.

According to the OSA Site File Search, previously recorded archaeological sites are not located within or adjacent to the APE. One previously recorded archaeological site, 13JH554, is located within the 1-mile search buffer. Site 13JH554 is recorded as a historic-age Euro-American school; the site is approximately 0.15-mile west of the APE. A previous cultural resources survey is located along Iowa Highway 22, immediately south of the APE; portions of that survey may intersect with the current APE.

Historical Maps and Aerial Review

Historic resources used to inform this review included maps and other resources ordered online. Topographic maps from 1894, 1965, and 1969 were reviewed (ERIS 2022a). Historical aerial photographs from 1937, 1951, 1963, 1970, 1983, 1994, 2005, 2010, and 2019 were also examined (ERIS 2022b). In the topographic map from 1894, structures are not marked in the northern portion of the APE; the southern portion of the APE is not included in the map. The topographic map from 1965 covers the northern portion of the APE; one structure is marked in the northeast corner of the project area. The 1969 map covers the southern portion of the APE and no structures are marked. In the aerial photograph from 1937, structures are not visible in the APE. In the aerial photographs from 1951, 1963, and 1970, a driveway is present in the northeast corner of the APE, and structures associated with that driveway are present within and adjacent to the APE. In the aerials from 1983 and later, the driveway and structures are no longer visible.

Conclusions and Recommendations

This review relied primarily upon public and nonpublic sources of information, as well as information from the client. Aerial photographs indicate that the APE is currently a vacant agricultural field; evidence of historic-age features was observed in aerial photographs and in topographic maps. Therefore, there is moderate potential to encounter intact, isolable historic-age archaeological deposits. Previously recorded archeological sites are not located within or adjacent to the APE. Based on the topographic setting, the likelihood of the APE to contain intact, isolable prehistoric deposits is low to moderate.

At this time, it is understood that the proposed project will not involve funding or permitting from federal entities, which would provide a nexus for federal oversight. If funding or permitting from a federal entity, such as the US Army Corps of Engineers, is required for this project, a cultural resources survey may be required by the Iowa State Historic Preservation Office (SHPO) in order to comply with Section 106 of the NHPA.

Sincerely,
Terracon Consultants, Inc.

Caitlin Gulihur, MA, RPA
Principal Investigator

Ann M. Scott, PhD, RPA
Authorized Project Reviewer

Attachments

Exhibit 1: USGS Topographic Map
Exhibit 2: Aerial Photograph
Exhibit 3: Web Soil Survey

References Cited

Chapman, S.S., J.M. Omernik, G.E. Griffith, W.A. Schroeder, T.A. Nigh, and T.F. Wilton
2002 *Ecoregions of Iowa and Missouri*. Color poster with map, descriptive test, summary tables, and photographs. U.S. Geological Survey, Reston, Virginia.

Environmental Risk Information Services (ERIS)
2022a *Topographic Maps*. Ordered from www.erisinfo.com. Received April 20, 2022.

2022b *Historical Aerials*. Ordered from www.erisinfo.com. Received April 21, 2022.

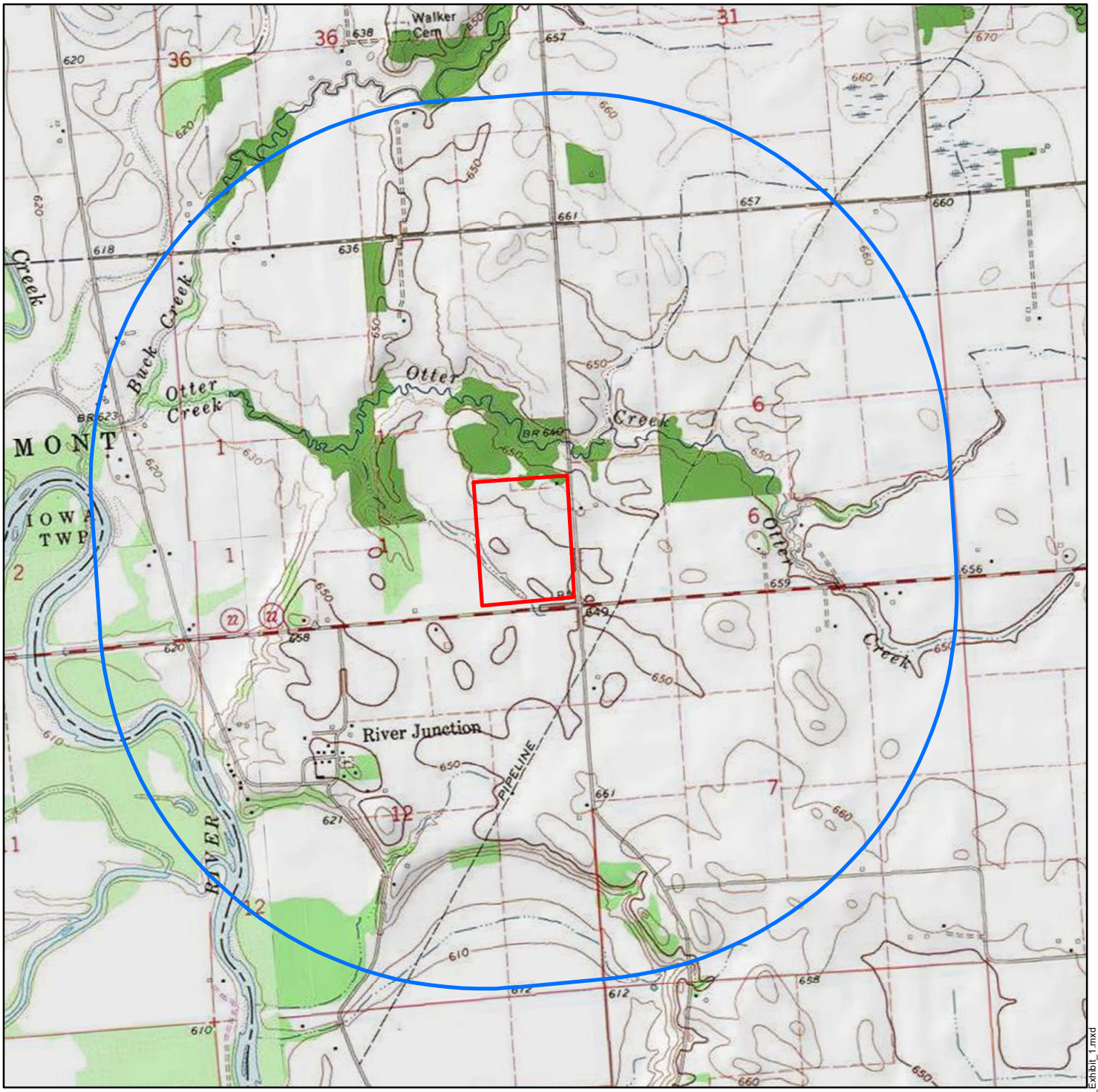
National Parks Service (NPS)
2022 *National Register of Historic Places*. National Parks Service, U.S. Department of the Interior. https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466. Accessed April 2022.

Office of the State Archaeologist
2022a Iowa Site File Search No. 2022142. Office of the State Archaeologist, University of Iowa. Received April 26, 2022.

2022b I-Sites Public Data Web Map. Office of the State Archaeologist, powered by ESRI. https://isugisf.maps.arcgis.com/apps/Viewer/index.html?appid=3117ad0729b046a697ae5ba82c9b8cfa. Accessed April 2022.

United State Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey Staff
2022 Web Soil Survey. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed April 2022.

Witzke, Brian J., Raymond R. Anderson, and John P. Pope
2010 *Bedrock Geologic Map of Iowa.* Iowa Geological and Water Survey. https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=36869. Accessed April 2022.



Legend

- Project Area
- 1-mile Buffer

N

Miles
0 0.25 0.5

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap USDA WSS, TNRIS, TWDB, USGS, USGS MR OSD, Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed

Project No.:	06227049, 2.4
Date:	4/28/2022
Drawn By:	CG
Reviewed By:	AS

Terracon
5307 Industrial Oaks Blvd.
Suite 160
Austin, TX 78735
PH. (512) 442-1122
terracon.com

USGS Topographic Map

USGS Topographic Maps:
Lone Tree (1969), West Liberty SW (1965), Hills (1983), and Riverside (1983)
Conifer Solar Site - Lone Tree
Johnson County, Iowa

Exhibit

1

Document Path: N:\GIS\Projects\2022\06227049\Project_Mxds\Task 2.4\06227049_Exhibit_1.mxd

Legend

Project Area

N

Feet

0 500 1,000

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap USDA WSS, TNRIS, TWDB, USGS, USGS MR OSD, Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project No.:	06227049, 2.4
Date:	4/28/2022
Drawn By:	CG
Reviewed By:	AS

Terracon
5307 Industrial Oaks Blvd.
Suite 160
Austin, TX 78735
PH. (512) 442-1122
terracon.com

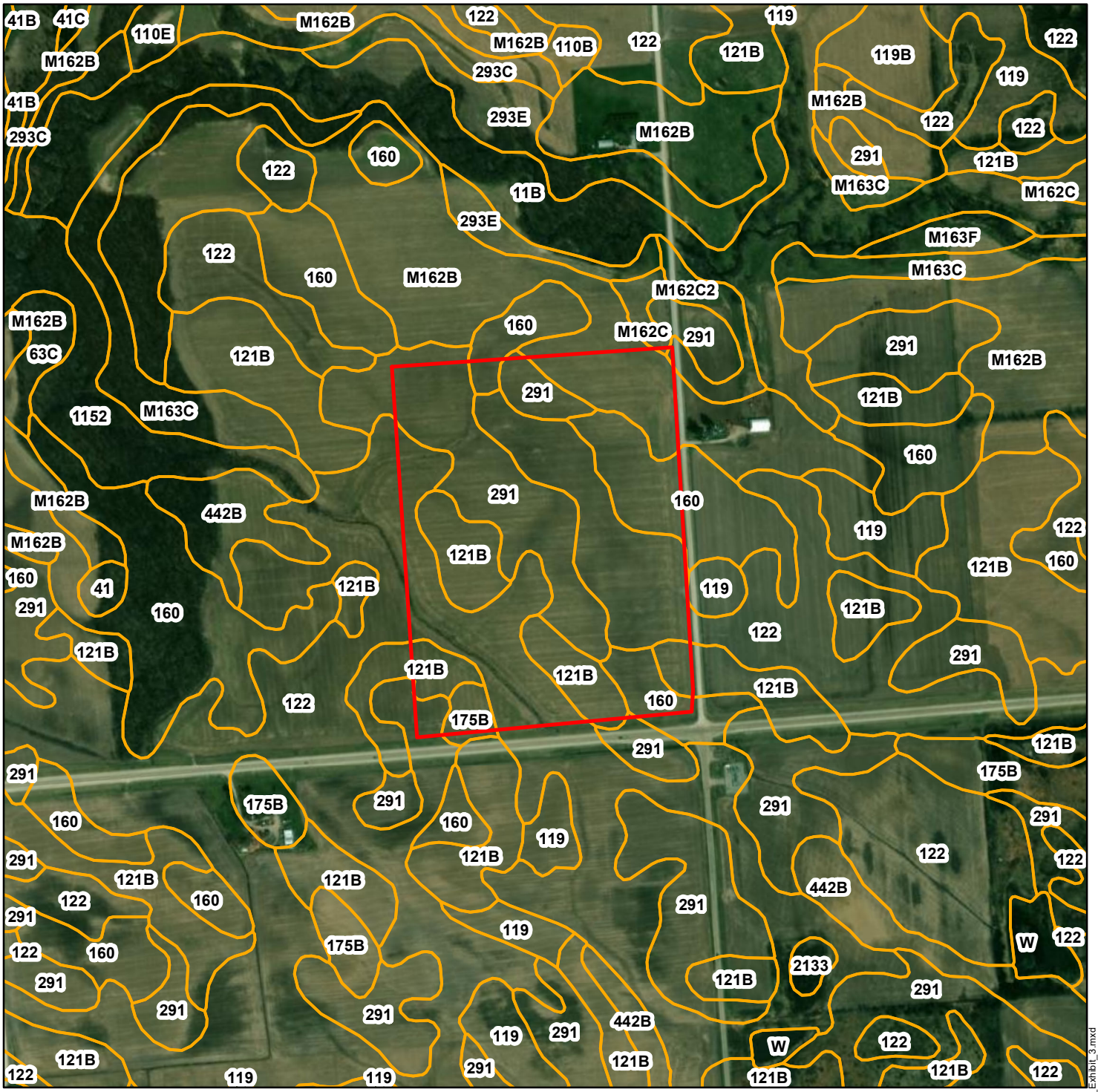
Aerial Photograph

Aerial Photograph:
April 2021
Conifer Solar Site - Lone Tree
Johnson County, Iowa

Exhibit

2

Document Path: N:\GIS\Projects\2022\06227049\Project_Mxds\Task 2.4\06227049_Exhibit_2.mxd



Legend

- Project Area
- Web Soil Survey

N

0 500 1,000 Feet

DATA SOURCES:
ESRI WMS - World Aerial Imagery, OpenStreetMap USDA WSS, TNRIS, TWDB, USGS, USGS MR OSD, Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project No.:	06227049, 2.4
Date:	4/28/2022
Drawn By:	CG
Reviewed By:	AS

Terracon
5307 Industrial Oaks Blvd.
Suite 160
Austin, TX 78735
PH. (512) 442-1122
terracon.com

Web Soil Survey

Natural Resource Conservation Service
Web Soil Survey
Conifer Solar Site - Lone Tree
Johnson County, Iowa

Exhibit

3

Document Path: N:\GIS\Projects\2022\06227049\Project_Mxds\Task 2.4\06227049_Exhibit_3.mxd

PHASE I ARCHEOLOGICAL INVESTIGATION FOR A PROPOSED LONE TREE SUBSTATION LOCATION, FREMONT TOWNSHIP, JOHNSON COUNTY, IOWA

Section 1, T77N R06W

BCA 3187-2

THIS VOLUME MAY CONTAIN SITE LOCATION INFORMATION
NOT FOR PUBLIC DISTRIBUTION

Prepared for
PCR US Investments Corp
1334 Brittmore Road, Suite 2407
Houston, Texas 77043

Prepared by
Jeremy L. Skeens
(Principal Investigator)

Bear Creek Archeology, Inc.
Derek V. Lee, Director
P.O. Box 347
Cresco, Iowa 52136

December 2022

MANAGEMENT SUMMARY

This report presents the results of a Phase I archeological investigation conducted for PCR US Investments Corp of Houston, Texas, by Bear Creek Archeology, Inc., of Cresco, Iowa, for a proposed Lone Tree substation location near the Iowa River valley in Johnson County, Iowa. The project area covers an undulating portion of an active agricultural field northwest of the Iowa Highway 22-Sioux Avenue intersection near Otter Creek and the Iowa River valley. Intermittent drainages cross the northwest and southwest corners of the project area. The project area is located in the E½, SE¼ of Section 1, T77N R06W, Fremont Township, Johnson County, Iowa. The total project area covers approximately 20.2 ha (49.9 ac).

No previously recorded archeological sites or historic properties/structures are located within the project area. A previous Phase I survey of the Iowa Highway 22 corridor included the south perimeter of the project area and recorded a nearby historic schoolhouse (13JH554). The archival search indicated four additional previous cultural resource investigations within 1.6 km (1 mi) of the project area. The River Junction Cemetery (52-05201) is the only inventoried historic property mapped within .8 km (.5 mi) of the project area.

Surface cover for the project area consisted of harvested corn residue with grass and trees along the drainages. Gentle to moderate slopes were common along the rolling landscape. The geomorphic evaluation identified a project area comprised mainly of eroded and/or disturbed uplands with evidence of prolonged saturation along the drainages. Relative intact soil was recorded beneath the plowzone along the drainage channel in the southwest corner. A linear rise at the south-central perimeter was comprised of deep, eolian deposits.

During the field investigation, a visual surface examination was conducted throughout the entire project area. A total of 30 shovel tests were excavated along each side of the southwest drainage channel. Nine auger tests were used to investigate the windblown deposits along the linear rise. No cultural materials were observed or collected from the project area during the investigation. No further cultural resource investigations are recommended for the identified project area.

Information contained in this report relating to the nature and location of archeological sites is considered private and confidential and nor for public disclosure in accordance with Section 304 of the National Historic Preservation Act (54 U.S.C § 307103); 36 CFR Part 800.6(a)(5) of the Advisory Council on Historic Preservation's rules implementing Sections 106 and 110 of the National Historic Preservation Act; Section 9(a) of the Archaeological Resource Protection Act (54 U.S.C. § 100707), and Chapter 22.7, subsection 20 of the Iowa Code.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES, continued

INTRODUCTION

The following report presents the results of a Phase I archeological investigation conducted for PCR US Investments Corp of Houston, Texas, by Bear Creek Archeology, Inc. (BCA) of Cresco, Iowa, for a proposed Lone Tree substation location near the Iowa River valley in Johnson County, Iowa. The Phase I archeological survey was conducted in accordance with the National Historic Preservation Act (Advisory Council on Historic Preservation 2004, 2016) and the Secretary of the Interior's standards for the identification of historic properties (National Park Service [NPS] 1983). The investigation meets or exceeds the guidelines for Iowa archeological investigations offered by the Association of Iowa Archaeologists (AIA; 2021). The fieldwork for this investigation was conducted by BCA personnel in November 2022. The fieldwork, data analyses, and report production were completed by BCA personnel under the supervision of the Principal Investigator. The resulting field notes and other records generated by BCA during this project are housed at BCA's office in Cresco, Iowa.

PROJECT LOCATION AND DESCRIPTION

Positioned in the Southern Iowa Drift Plain physiographic region (Prior 1991; Figure 1), the project area encompasses an undulating portion of an active agricultural field northwest of the Iowa Highway 22-Sioux Avenue intersection. Intermittent drainages cross the northwest and southwest corners of the project area The project area occurs approximately .6 km (.4 mi) east of the Iowa River valley and 125 m (410 ft) south of Otter Creek. The project area is located in the E½ SE¼ of Section 1, T77N R06W, Fremont Township, Johnson County, Iowa (Figures 2 and 3). The total project area covers approximately 20.2 ha (49.9 ac).

INVESTIGATION PREMISES

The purpose of this investigation is to document the cultural resources within the project area at the Phase I level of investigation. The goals of the Phase I survey are based on the Secretary of the Interior's Standards and Guidelines for the Identification of Archeological Properties (NPS 1983:44716–44728). These standards are summarized and annotated within the archeological guidelines for Iowa (AIA 2021). Phase I surveys are intended to provide basic data on the occurrence, location, and identification of cultural resources within a given area.

The survey strategy of this Phase I investigation was based on an analysis of the project area and the landforms that exist within it. Archeological sites are integrated into the environment by natural processes and may be viewed not only as cultural remains, but also as geological deposits. The geographic and pedologic character of a region is conditioned

by geological processes, and an awareness of these processes is fundamental to any evaluation of the archeological record. Landform and soil attributes have a strong influence on the presence, absence, and distribution of the plant and animal populations utilized by human groups. Geological processes affect not only the patterns of human habitation and environmental exploitation, but they are also largely responsible for the preservation, destruction, and manipulation of the archeological record. Therefore, archeological sites should be viewed as a product of both cultural and geological processes (Bettis and Green 1991).

This perspective on site location takes into account both the geological processes and cultural interactions of an area, allowing archeologists to use landform modeling to predict site occurrence and patterned distributions within a given region (Bettis and Benn 1984; Bettis and Thompson 1981). Such an approach also proves useful in investigator recognition of post-settlement alluvium (PSA), made land, plowzones, and other disturbances that may have modified the area under investigation.

As a tool of cultural resource management, this type of landform modeling is critical to the development and implementation of survey strategies. More sensitive strategies toward geomorphological context allow the investigator to focus on those areas where the probabilities of site occurrence are highest. This reduces or eliminates the cost of surveying areas where sites should not sensibly occur in situ (e.g., made land, heavily disturbed areas, and landforms consisting entirely of recent alluvium, etc.). Informed survey strategies such as the one outlined above allow for the determination of the depth and distribution of subsurface tests necessary for the detection of buried cultural resource deposits. Additionally, the nature of the proposed impacts can be assessed in terms of the landforms present.

GENERAL INVESTIGATION METHODOLOGY

Prior to beginning the fieldwork, on-line site and previous survey records at the Office of the State Archaeologist (OSA) in Iowa City were examined to determine if previously reported properties are recorded within or near the project area. To check for non-extant structures, digital copies of the nineteenth century General Land Office (GLO) map, historic plat maps, and aerial photographs stored on the BCA server were also consulted.

Also preceding the fieldwork, a brief geomorphic review was conducted to assess the general landform context of the survey area. A ¾" cm hand probe was used to inspect subsurface deposits and monitor the depth of the plowzone and other modern impacts. Representative soil profiles were recorded for various landscape positions, supplemented by visual assessments of the project area. Upon completion of this assessment, the site discovery stage utilized the excavation of subsurface shovel and auger tests on those landforms determined by the geomorphic evaluation to have suitable potential for cultural materials coupled with either low surface visibility and/or the presence of an intact soil stratigraphy. When undertaken, subsurface tests were advanced at 10–15 m (32.8–49.2 ft)

intervals, with the removed matrix screened through one-quarter inch hardware mesh. Each shovel test was a minimum of 35 cm in diameter, while bucket auger tests had a minimum diameter of 20 cm. Subsurface tests were advanced to a maximum depth of 140 cm below surface, or well into the subsoil (i.e., Bt or E/Bt horizon). All tests were backfilled.

ENVIRONMENTAL CONTEXT AND LANDFORM MODELS

Physiographic Region

The project area is located in east-central Iowa within the Southern Iowa Drift Plain physiographic region (Prior 1991; Figure 1). Although the Southern Iowa Drift Plain was not glaciated during the Wisconsinan glacial stage, this region saw repeated earlier glacial events broadly identified as the Illinoian (confined to the eastern margins of the region) and Pre-Illinoian (comprised of multiple glacial and interglacial stages covering the entire region) epochs that deposited thick glacial drift (till) across the entire landscape (Prior 1991). In most places the till is blanketed by Wisconsinan-age loess (Prior 1991) although, as noted in soil surveys from the region, heavy erosion on steeper sideslopes sometimes expose remnants of a paleosol formed on the glacial drift. Exposed sporadically in larger stream valleys and deeper ravines, Mississippian bedrock is present below the till in the southeastern part of the state with isolated outcrops of Pennsylvanian-age coal also reported. Since the end of the Illinoian glacial stage in southern Iowa, approximately 500,000 years ago, the Southern Iowa Drift Plain has been exposed to stream erosion, weathering processes, soil development, loess deposition, and hillslope evolution resulting in a well-integrated drainage network and multi-stepped erosional surfaces. Topographic features include mostly level upland divides and plateaus, steeply rolling hills, narrow interfluves, and alluvial lowlands (Bettis and Littke 1987; Prior 1991). Due to the age of the sediments (Bettis and Littke 1987), archeological sites in the uplands are limited to the near surface and are commonly incorporated into the plowzone in agricultural fields.

Upland Landform Model

The upland landform model (Figure 4) used in this report is based on Ruhe's (1969) analysis of hillslope evolution detailing the erosional and depositional sequences of upland components. Hillslopes are divided into five components (listed in descending order): summit, shoulder, sideslope, footslope, and toeslope. Not all components, however, may be present on a given hillslope.

Summits comprise the upper portion of the uplands and tend to be stable but are subjected to minor deposition and erosion by eolian processes. Shoulders form by the gradual back cutting of hillslopes at summit margins and are generally convex in cross-section with a low degree of slope. Comprised of backslope, headslope, and noseslope subcomponents, sideslopes are erosional features formed by the back cutting of valley walls. Footslopes, the lower remnants of hillslopes, are eroded and often covered by colluvial deposits derived

from the shoulder and backslope. Toeslopes are found at the base of the upland landform and consist almost entirely of colluvial deposits.

Due to their low degree of erosion and relative flatness, summits and shoulders have high potential for containing prehistoric sites that, at times, may be intact and shallowly buried. Footslope and toeslope areas also have good prehistoric site potential because they represent depositional features (i.e., they are time transgressive in terms of stability), generally have a low degree of slope (Van Nest 1993) and may be relatively close to water. Sideslopes, because of their steeper inclines and higher rates of erosion, rarely contain intact prehistoric materials. Finally, historic archeological sites can be found on any upland landform component.

When using this model, it is important to account for agriculturally induced wind and water erosion. All cultivated upland components have been subjected to erosional pressures. Consequently, summit, shoulder, footslope, and toeslope positions that have undergone decades of cultivation typically possess lower potential for intact sites.

Project Area Soil and Landscape Analysis

The project area covers an undulating, loess-mantled outwash terrace near the Iowa River valley. Intermittent, upland drainages within the project area ultimately flow northwest into Otter Creek along the Iowa River valley margin. The Soil Surveys of Johnson County, Iowa (Schermerhorn 1983) and the Natural Resources Conservation Service (NRCS; 2021) map seven soil series (divided into nine soil units) within the project area (Table 1; Figure 5).

Table 1. Soil information for the project area (NRCS 2021; Schermerhorn 1983; Web Soil Survey 2022)

Symbol/Soil Name	% of Project Area	Landscape Position	Drainage Class	Parent Material	Native Vegetation
(119) Muscatine silt loam, 0–2% slopes	<.1	interfluves	somewhat poor	fine-silty loess	tall prairie grass
(121B) Tama silt loam, 2–5% slopes	15.9	interfluves	well	fine-silty loess	tall prairie grass
(122) Sperry silt loam, depressional, 0–1% slopes	37.5	interfluves	very poor	loess	herbaceous wetland plants
(160) Walford silt loam, 0–2% slopes	12.3	interfluves	poor	fine-silty loess	herbaceous/woody plants
(175B) Dickinson fine sandy loam, 2–5% slopes	2	stream terraces, dunes	well	sandy eolian deposits	tall prairie grass

Table 1, continued. Soil information for the project area (Schermerhorn 1983; NRCS 2021; Web Soil Survey 2022)

Symbol/Soil Name	% of Project Area	Landscape Position	Drainage Class	Parent Material	Native Vegetation
(291) Atterberry silt loam, 1–3% slopes	23.8	interfluves	somewhat poor	fine-silty loess	tall prairie grass and trees
(M162B) Downs silt loam, till plain, 2–5% slopes	8.3	interfluves	well	fine-silty loess	tall prairie grass and scattered trees
(M162C) Downs silt loam, till plain, 5–9% slopes	.1	interfluves	well	fine-silty loess	tall prairie grass and scattered trees
(M162C2) Downs silt loam, till plain, 5–9% slopes, eroded	.1	interfluves	well	fine-silty loess	tall prairie grass and scattered trees

The upland summit in the northeast corner of the project area is mapped as gently to moderately (2–9%) sloped Downs silt loam (map symbols M162B, M162C, and M162C2), a small portion of which is eroded. As it occurs within the project area, the Downs soil series consists of well drained soil formed in fine-silty loess along interfluves on till plains. Approximately 38% of the project area, including the area directly adjacent the intermittent drainages, is mapped as Sperry silt loam (122), a very poorly drained soil formed in depressions along interfluves in loess. A small portion (approximately 2%) of the project area near the south perimeter is mapped as Dickinson fine sandy loam, which consists of well drained soil formed in sandy windblown deposits on stream terraces or dunes. Just over half (approximately 52%) of the project area is mapped as Muscatine (119), Tama (121B), Walford (160), and Atterberry (291) silt loams. These soil series range in drainage class from poor to well drained and are all formed in fine-silty loess along interfluves.

A review of the topographic map (Figure 2) and lidar imagery (Figure 6) indicates the project area covers a rolling outwash terrace situated above Otter Creek and the Iowa River valley. The highest elevation occurs along an upland summit along Sioux Avenue in the northeast corner of the project area. Intermittent drainages that cross the project area feed into Otter Creek at the Iowa River valley margin. The entire project area has likely been affected by prolonged use of the land for cultivation. Given the likelihood of disturbance at the surface of the agricultural field and the position of the project area along uplands near perennial waterways, the archeological potential for the project area is considered low to moderate.

While soil survey and topographic map analyses are essential at the prefield level, field investigation is necessary to determine if the reported information from these sources is accurate. Because much of the soil survey information is documented without localized field inspection and landforms are constantly evolving, one must accurately document the current landscape to determine a given project area's archeological potential.

ARCHIVAL REVIEW RESULTS

Previously Recorded Sites, Properties/Structures, and Surveys

Prior to fieldwork, information regarding previously documented archeological sites, historic properties/structures, and former surveys within or near the project area was obtained from the on-line resource managed by OSA. The archival search indicated no previously recorded archeological sites or inventoried historic properties/structures in or directly adjacent the project area. A 1986 (Jacobs) Phase I-level survey conducted prior to improvements along Iowa Highway 22 overlaps the south perimeter of the project area. The remains of a nearby historic schoolhouse (13JH554) were collected from the surface approximately .3 km (.2 mi) west of the current project area. The site was recommended for no further work. No recommendation for National Register of Historic Places (NRHP) eligibility was given at the time of the survey. This is the only archeological site on record within a 1.6 km (1 mi) radius of the project area.

River Junction Cemetery (a.k.a. Stumptown Cemetery [Site Inventory Number 52-05201]) is the only inventoried historic property mapped within .8 km (.5 mi) of the project area. The cemetery is located southwest of the project area along the east side of Otter Creek Road in Section 12, T77N R06W, Fremont Township, Johnson County. The cemetery is still in use and will not be affected by the proposed project.

Four additional previous cultural resource surveys have been conducted within a 1.6 km (1 mi) radius of the project area (Table 2). A Phase I archeological survey for a Lone Tree substation expansion project was conducted immediately southeast of the Iowa Highway 22-Sioux Avenue intersection (Butler 2011). A portion of River Junction Road was included in Phase IA investigations conducted southwest of the project area by BCA (Scott 2011a, 2011b). A Phase I survey for a small development project was also conducted southwest of the current project area (Anderson 2019). No new sites were recorded as a result of the nearby investigations.

Table 2. Previously conducted archeological surveys within 1.6 km (1 mi) of the project area.

R&C/Report #	Investigation Type	Results	Reference
19860700024*	Phase I	two new sites, including nearby 13JH554	Jacobs 1986
20040500153	Phase I	no sites	Butler 2011
BCA 1790a	Phase IA	no new sites	Scott 2011a
BCA 1820a	Phase IA	no new sites	Scott 2011b
TR 1065	Phase I	no sites	Anderson 2019

*overlaps the project area

Historic Maps and Aerial Photographs

An 1841 GLO map, 1875 statewide atlas, and four additional late nineteenth to early twentieth century historic plat maps were used to determine if documented historic buildings or structures once existed within the project area (Andreas 1875; GLO 1841;

Geographic Publishing Company 1917; Huebinger 1900; Novak 1889; Thompson and Everts 1870; Figures 7–12). Historic and modern aerial photographs were reviewed to determine if any potential historic buildings or structures were located in the project area and to gain a better understanding of the land use practices within the project area since 1937 (Figures 13–16).

The 1841 GLO map does not indicate the presence of any historic buildings or structures (Figure 7). Though no potential structures occur within the project boundaries, a schoolhouse (13JH554) is illustrated west of the project area on all of the subsequent historic maps (Andreas 1875; GLO 1841; Geographic Publishing Company 1917; Huebinger 1900; Novak 1889; Thompson and Everts 1870; Figures 8–12). The early aerial photographs show most of the project area utilized as agricultural land, with a minimal amount of timber along the northeast perimeter. The drainage channel is visible along the southwest corner (Figures 13 and 14). Instances of channelization along the southwest drainage channel can be seen in the 1963 and 1983 aerial photographs. By 1983, the wooded northeast perimeter was converted to agricultural land (Figures 15 and 16).

While historic plat maps and aerial images can provide a wealth of information regarding historic properties, structures may exist that were not recorded and those that are recorded can occur in a different location than that depicted. It is for these reasons that historic plat maps must be substantiated through field investigation.

SURVEY RESULTS

Geomorphic Evaluation

To begin the investigation, a geomorphic evaluation was conducted across the project area. Based on the landscape evaluation, the project area generally includes a portion of a level to moderately (0–9%) sloped outwash terrace near Otter Creek and the Iowa River valley. Intermittent drainages associated with Otter Creek occur in the west half of the project area. Based on the soil data, there is the potential for eolian deposits near the south perimeter. The uplands throughout the project area are expected to be eroded and/or disturbed by long-term agricultural use and alteration of the drainage channel in the southwest corner. The geomorphic evaluation utilized visual assessments and the extraction of seven hand probes, resulting in six representative profiles. Landforms and soil profile locations are reproduced in Figure 3. Soil profiles (SPs) are presented in Appendix A.

The project area is situated in an active agricultural field along an undulating outwash terrace. The steepest slopes (5–9%) occur along a rise in the northeast corner near Sioux Avenue and a linear rise at the south-central perimeter. Intermittent drainages cross the northwest and southwest corners (Figures 17–23). Soil along the northwest drainageway floor was found to be disturbed/eroded and poorly drained, with a shallow plowzone directly overlaying gleyed Bt horizons (Figures 24 and 25; SP 1). The partially intact remnant of an A horizon was recorded below the disturbed plowzone near the southwest

drainage channel. The relatively intact silt loam quickly transitioned to the moderately well developed and poorly drained subsoil at this location (Figures 26–28; SP 2). Near level positions across most of the outwash terrace consisted of a disturbed plowzone extending to approximately 25 cm. The underlying silty clay loam became more well developed with depth (Figures 29–32; SPs 3 and 4). The higher summit in the northeast corner was heavily eroded and disturbed at the surface (Figure 33; SP 5). A soil probe utilized along the linear rise extending from the south-central perimeter revealed deep, fine sand horizons deposited by wind. Disturbance from long-term agricultural use was noted at the surface (Figures 34–36; SP 6).

Many of the upland landforms possess low potential of containing in situ archeological deposits due to disturbance caused by ongoing cultivational use and erosion, as well as evidence of prolonged saturation. There is low to moderate potential for archeological deposits along the southwest drainage channel based on the relatively intact surficial deposits observed beneath the plowzone during the geomorphic evaluation. Intact cultural deposits could also be encountered along the south-central linear rise due to the depositional nature of the eolian deposits that occur along the landform. Based on the results of this evaluation, subsurface testing will focus on these positions in the south portion of the project area. Cultural material should be expressed at or near the surface of the active agricultural field throughout the remainder of the project area and a visual surface inspection will be conducted.

Archeological Survey

The survey strategy utilized for this investigation was determined by the results of the archival review, conditions observed in the field, geomorphic investigation, and the potential of a given landform to contain cultural resources. For the purposes of site discovery and evaluation, a visual surface inspection was implemented throughout the project area. Systematic subsurface testing was employed along the drainage channel in the southwest corner, as well as the near level summit of a linear rise in the south-central portion of the project area, based on soil observed during the geomorphic evaluation. During the initial site discovery stage, a total of 30 shovel tests and nine bucket auger tests were excavated.

At the time of the investigation, nearly all of the project area was covered in harvested corn residue (50–90% ground surface visibility [GSV]; Figures 37 and 38). A minimal amount of grass and small trees (<10% GSV) were present along the drainages in the northwest and southwest corners. Based on the adequate surface visibility and the disturbed plowzone recorded during the geomorphic evaluation (Appendix A: SPs 3–5), the investigation began with a pedestrian survey initiated at 5 m intervals throughout the entire project area (Figure 39). No cultural material was present along the surface of the harvested field.

Subsurface testing began with a series of auger tests (n = 9) placed at 15 m intervals along the summit of the linear rise in the south-central portion of the project area (Figure 40). Due to the depositional nature of eolian deposits, cultural material could be encountered

within the weakly structured, sandy B horizons found along the landform. Therefore, the auger tests placed on the rise were excavated through the Bw horizons and into the underlying E/Bt horizon to approximate depths of 100–140 cm. The three northernmost test locations consisted of disturbed soil with an Ap-Bw-Bt profile that was typical for most of the outwash terrace within the project area (Appendix A: SPs 3–5). These three tests ended at approximate depths of 40–55 cm, or 20 cm into the sterile subsoil. Two parallel transects of shovel tests were placed at 10–15 m intervals along the edges of the drainage channel in the southwest corner (Figure 41). The intact A horizon remnant was found at many of the test locations along the channel, excluding only the northwest and southeast ends of the transects where the typical Ap-Bw-Bt profile was observed. The Btg horizon was encountered at 30–55 cm during shovel testing and tests concluded at approximately 50–75 cm in depth. No cultural material was observed or collected from any of the subsurface test locations in the project area.

SUMMARY AND RECOMMENDATIONS

The preceding report presents the results of a Phase I archeological investigation conducted across the project area for a proposed Lone Tree substation location in Johnson County. The project area exists within an active agricultural field along a loess-mantled outwash terrace near Otter Creek and the Iowa River valley . No previously recorded archeological sites or historic properties/structures are located within the project area. A previous Phase I survey of the Iowa Highway 22 corridor included the south perimeter of the project area and recorded a nearby historic schoolhouse (13JH554). The archival search indicated four additional previous cultural resource investigations within 1.6 km (1 mi) of the project area. The River Junction Cemetery (52-05201) is the only inventoried historic property mapped within .8 km (.5 mi) of the project area.

Surface cover for the project area consisted of harvested corn residue (30–50% GSV) with grass and trees (<10% GSV) along the drainages. Gentle to moderate slopes were common along the rolling landscape. The geomorphic evaluation identified a project area comprised mainly of eroded and/or disturbed uplands with evidence of prolonged saturation along the drainages. Relative intact soil was recorded beneath the plowzone along the drainage channel in the southwest corner. A linear rise at the south-central perimeter was comprised of deep, eolian deposits.

During the field investigation, a visual surface examination was conducted throughout the entire project area. A total of 30 shovel tests were excavated along each side of the southwest drainage channel. Nine auger tests were used to investigate the windblown deposits along the linear rise. No cultural materials were observed or collected from the project area during the investigation. No further cultural resource investigations are recommended for the identified project area.

No technique of modern archeological research is adequate to identify all archeological sites or cultural deposits within a given area. In the event that any cultural materials not

recorded by this investigation are discovered in the course of the proposed development activities, the State Historic Preservation Office should be contacted immediately. It is the responsibility of the developer to protect cultural resources from disturbance until a professional examination can be made or authorization to proceed is granted by the State Historic Preservation Office or a designated representative.

Information contained in this report relating to the nature and location of archeological sites is considered private and confidential and not for public disclosure in accordance with Section 304 of the National Historic Preservation Act (54 U.S.C § 307103); 36 CFR Part 800.6(a)(5) of the Advisory Council on Historic Preservation's rules implementing Sections 106 and 110 of the National Historic Preservation Act; Section 9(a) of the Archaeological Resource Protection Act (54 U.S.C. § 100707), and Chapter 22.7, subsection 20 of the Iowa Code.

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FIGURES

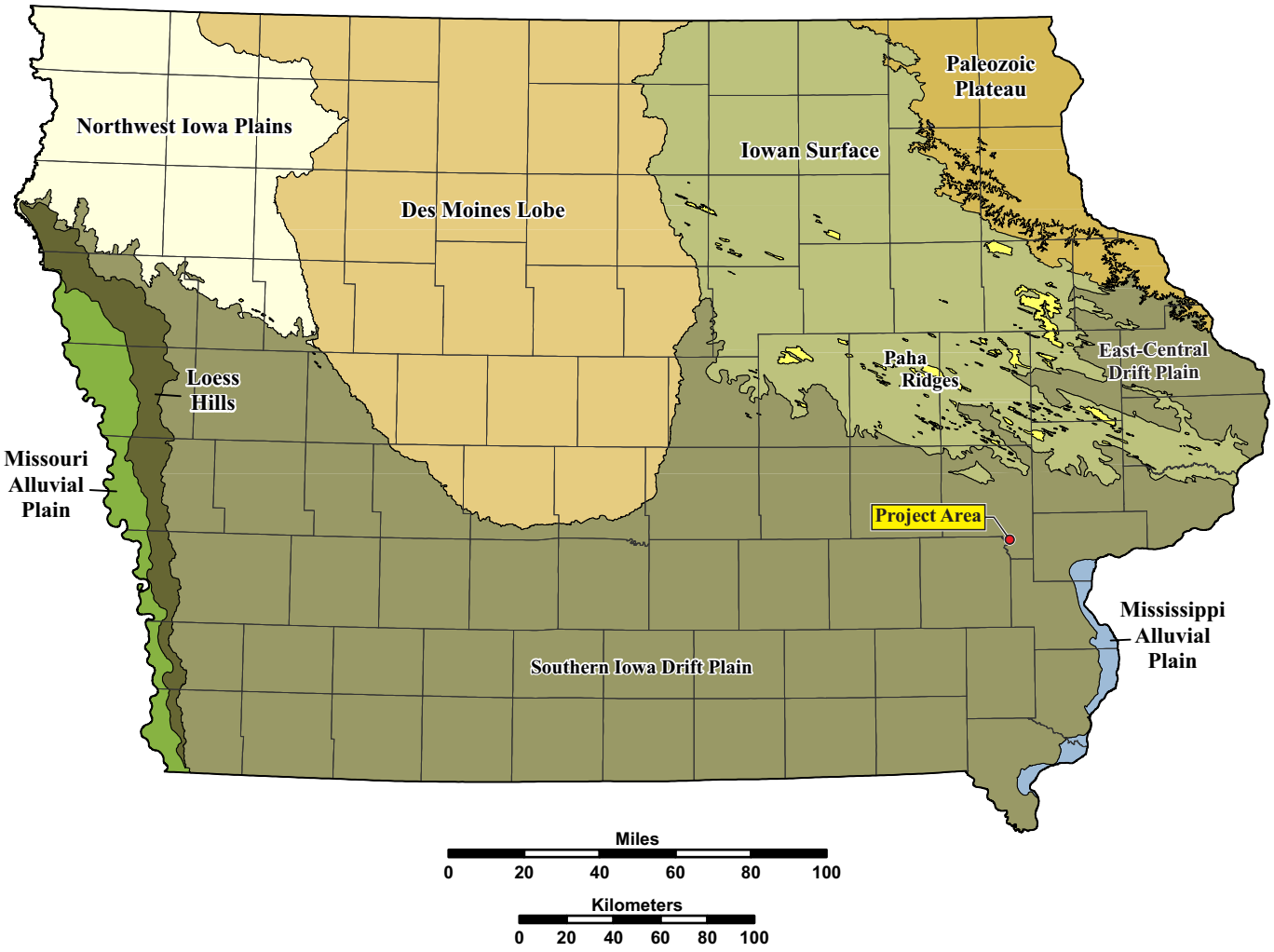

Figure 1. Physiographic location of the project area (adapted from Prior [1991:31]).

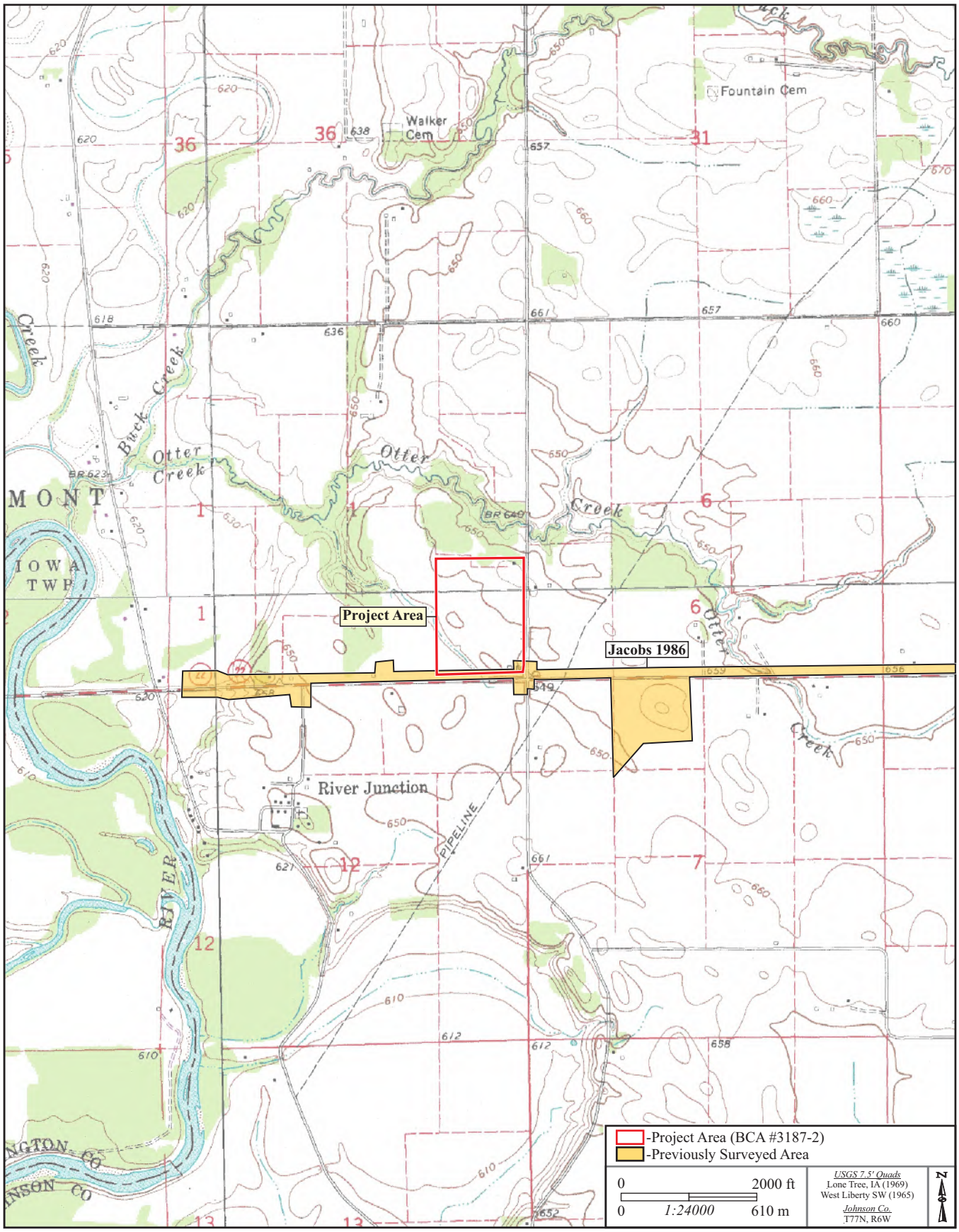

Figure 2. Topographic coverage of the project area.

Figure 3. Scale map of the project area.

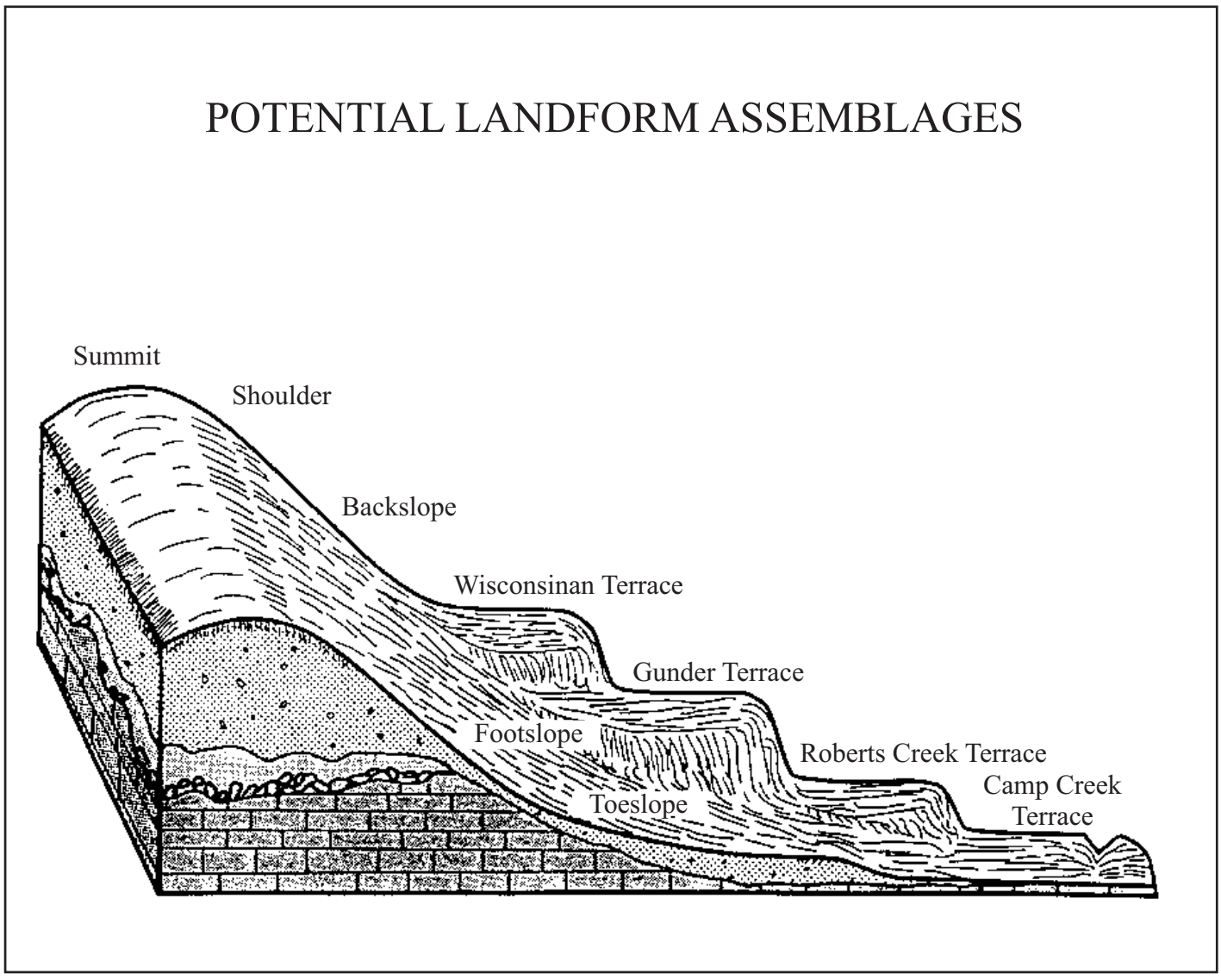

Figure 4. Diagram of potential landform components (adapted from Ruhe [1969]).

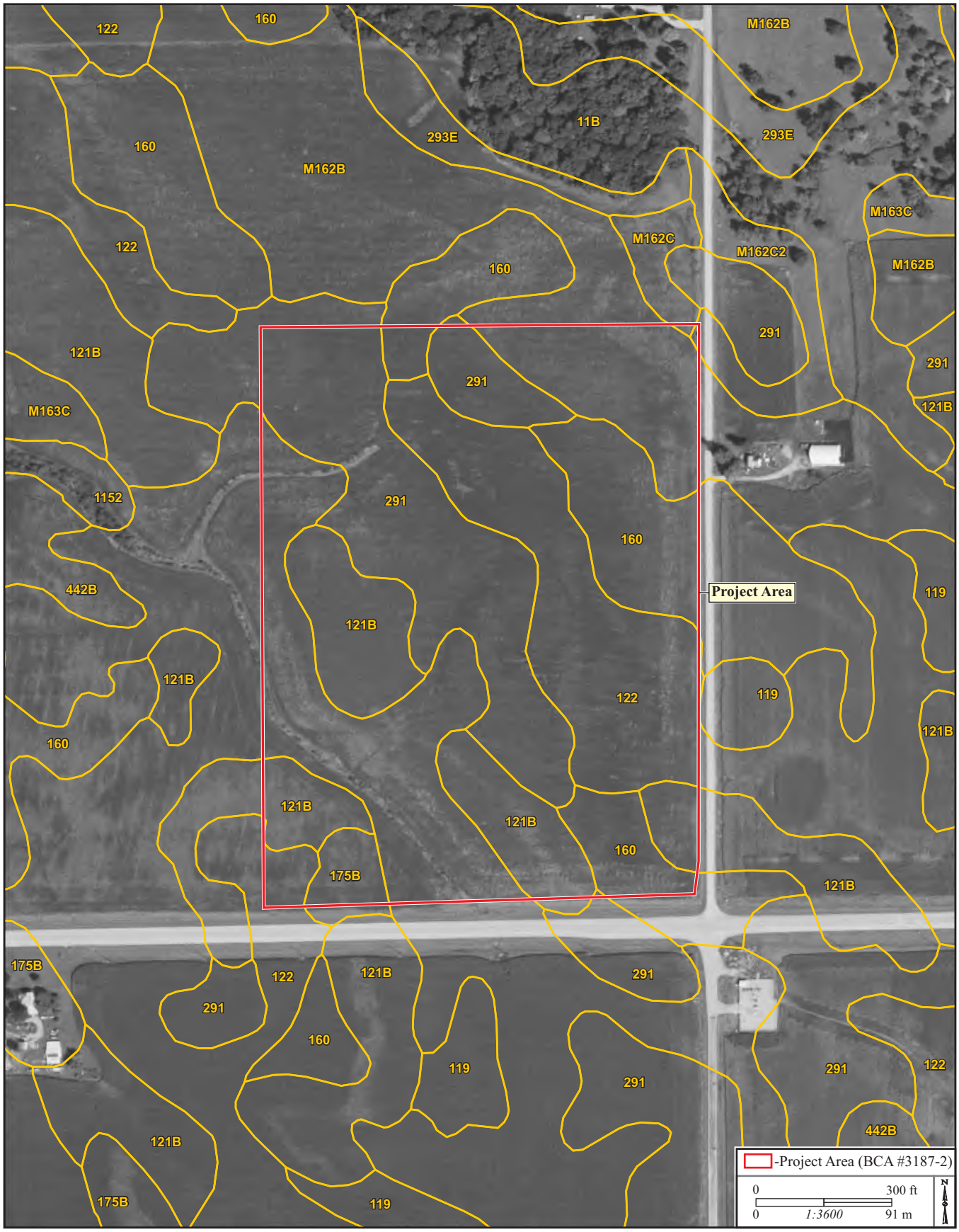

Figure 5. Soil map of the project area (NRCS 2021).

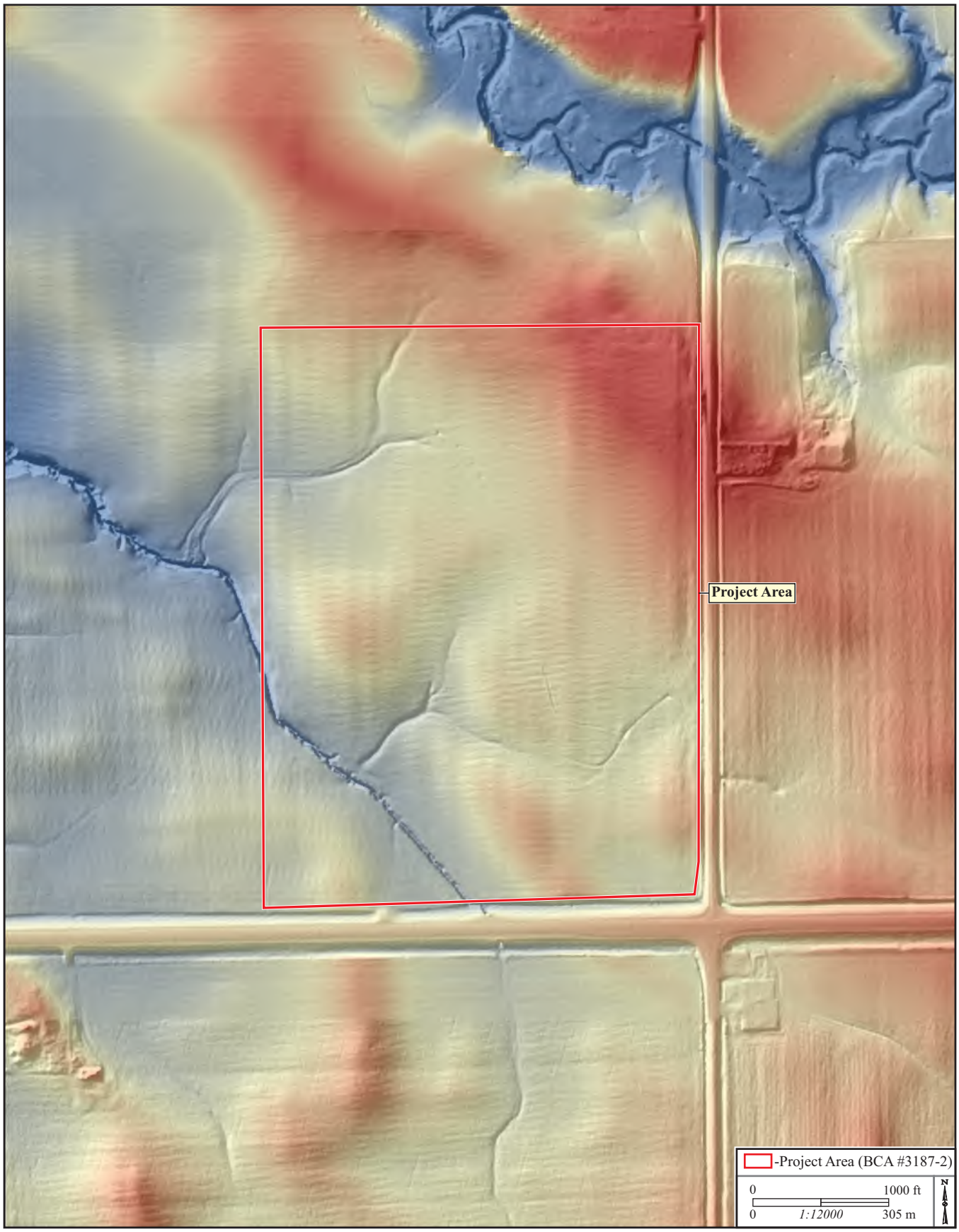

Figure 6. Lidar image of the project area.

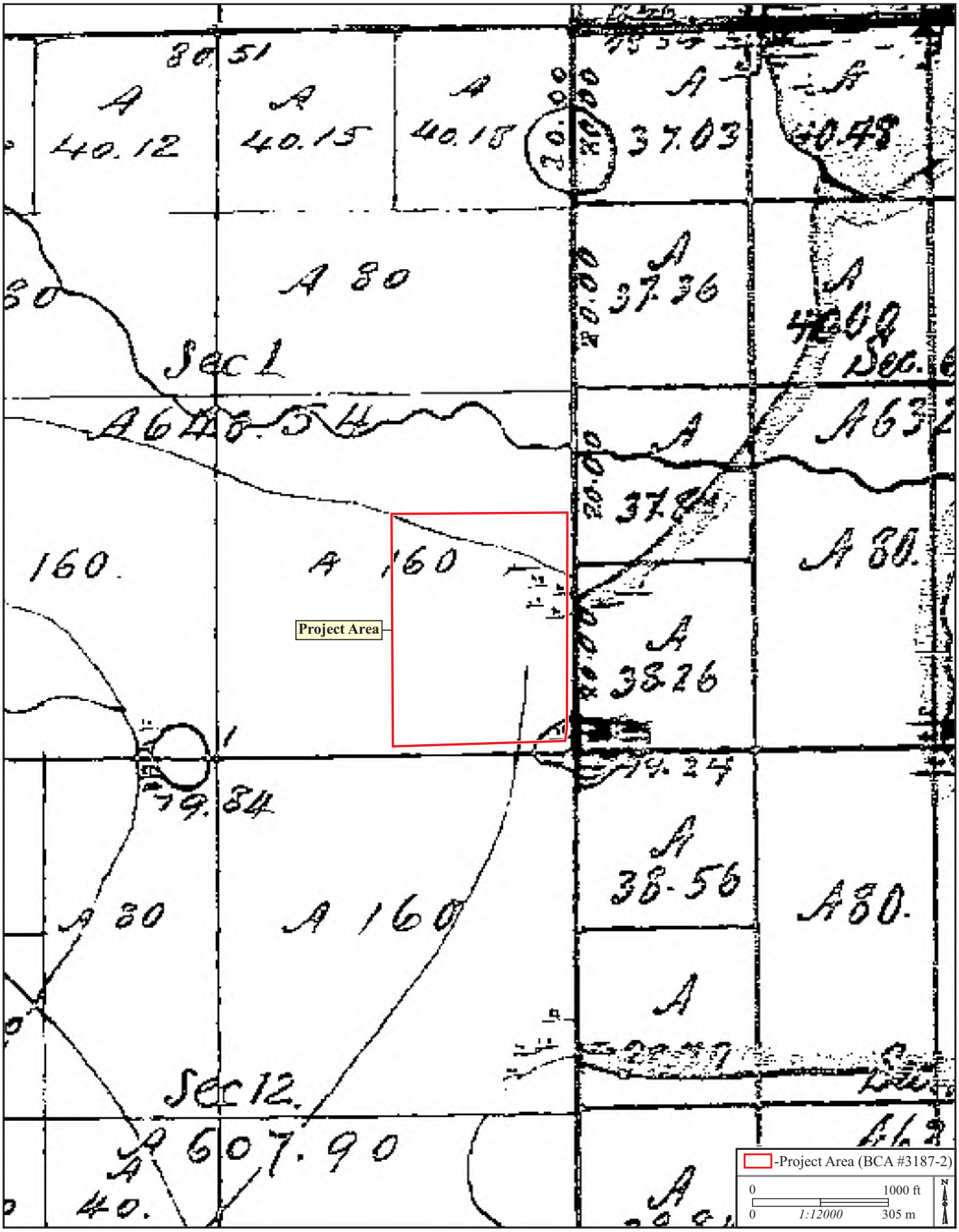

Figure 7. 1841 map of the project area (GLO).

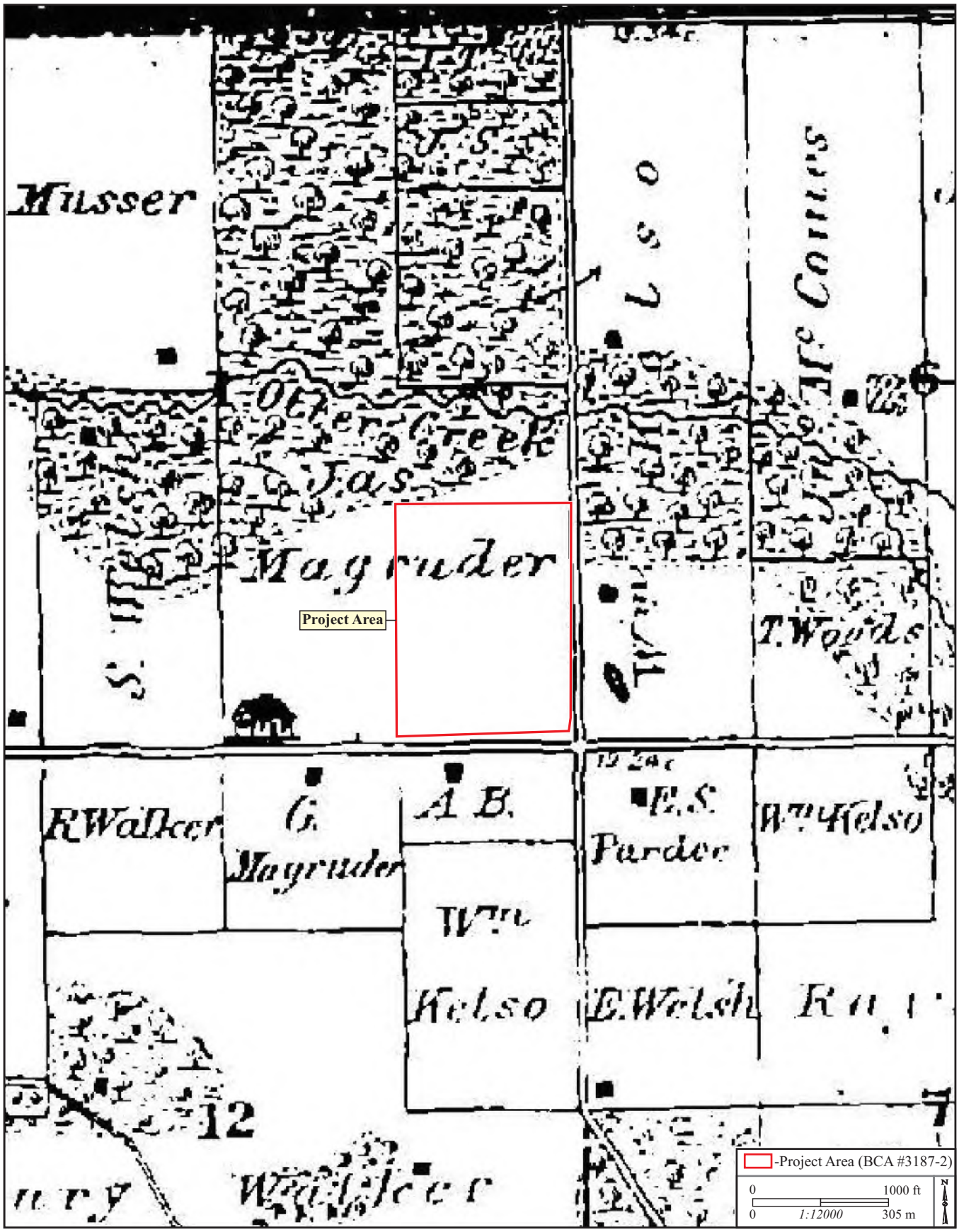

Figure 8. 1870 map of the project area (Thompson and Everts).

Figure 9. 1875 map of the project area (Andreas).

Figure 10. 1889 map of the project area (Novak).

Figure 11. 1900 map of the project area (Huebinger).

Figure 12. 1917 map of the project area (Geographic Publishing Company).

Figure 13. 1937 aerial photograph of the project area.

Figure 14. 1951 aerial photograph of the project area.

Figure 15. 1963 aerial photograph of the project area.

Figure 16. 1983 aerial photograph of the project area.

Figure 17. Project area from the northwest corner. View to the east (11/22/22).

Figure 18. Project area from the northeast corner. View to the south (11/22/22).

Figure 19. Project area from the southeast corner. View to the north (11/22/22).

Figure 20. Project area from the southwest corner. View to the northeast (11/22/22).

Figure 21. Linear rise along the south-central perimeter of the project area. View to the north-northeast (11/22/22).

Figure 22. Intermittent drainage in the northwest corner of the project area. View to the east (11/22/22).

Figure 23. Intermittent drainage in the southwest corner of the project area. View to the northwest (11/22/22).

Figure 24. Soil Profile 1, 0-34 cm (11/22/22).

Figure 25. Soil Profile 1, 34-61 cm (11/22/22).

Figure 26. Soil Profile 2, 0-34 cm (11/22/22).

Figure 27. Soil Profile 2, 34-65 cm (11/22/22).

Figure 28. Soil Profile 2, 65-99 cm (11/22/22).

Figure 29. Soil Profile 3, 0-34 cm (11/22/22).

Figure 30. Soil Profile 3, 34-62 cm (11/22/22).

Figure 31. Soil Profile 4, 0-34 cm (11/22/22).

Figure 32. Soil Profile 4, 34-65 cm (11/22/22).

Figure 33. Soil Profile 5, 0-33 cm (11/22/22).

Figure 34. Soil Profile 6, 0-34 cm (11/22/22).

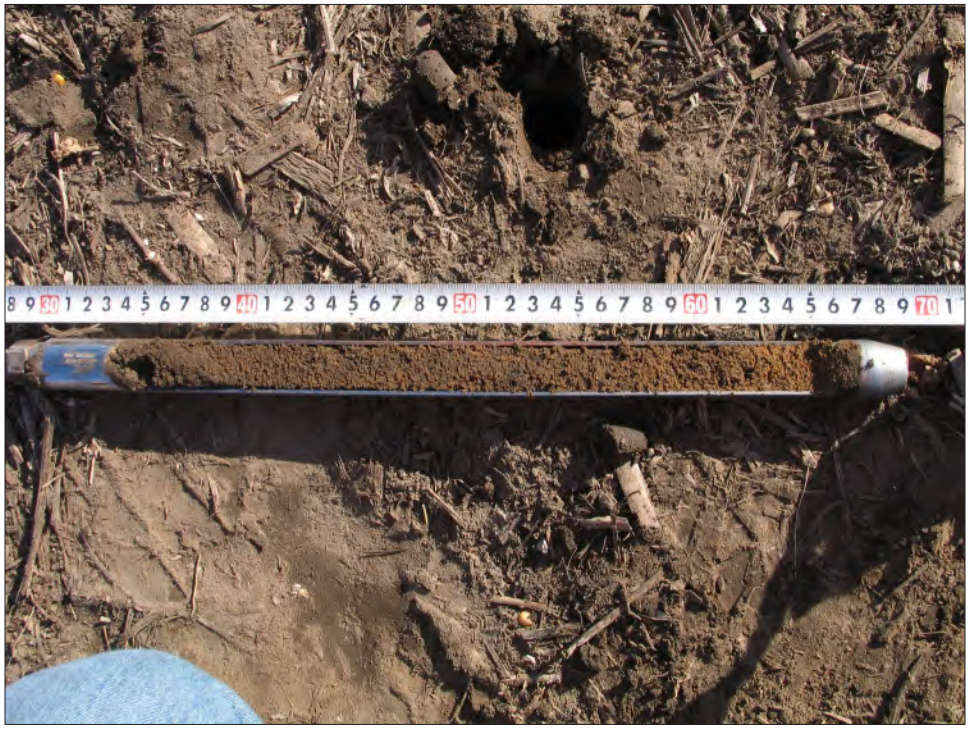

Figure 35. Soil Profile 6, 34-69 cm (11/22/22).

Figure 36. Soil Profile 6, 102-130 cm (11/22/22).

Figure 37. Typical ground surface visibility (50-70%) in the project area (11/22/22).

Figure 38. Typical ground surface visibility (70-90%) in the project area (11/22/22).

Figure 39. Pedestrian survey of the project area. View to the east (11/22/22).

Figure 40. Auger testing near the south-central perimeter of the project area. View to the northwest (11/22/22).

Figure 41. Shovel testing along the drainage channel in the southwest corner of the project area. View to the northwest (11/22/22).

APPENDIX A
Soil Profiles

DESIGNATION: SP 1
LANDSCAPE POSITION: drainageway floor
PARENT MATERIAL: loess
VEGETATION: harvested corn residue, 50–70% ground surface visibility (GSV)
METHOD: hand probe
DATE DESCRIBED: 11/22/2022
DESCRIBED BY: J. Skeens
COMMENTS: This profile was recorded along the floor of an intermittent drainageway in the northwest corner of the project area.

Depth (cm)	Soil Horizon	Description
0–19	Ap	Very dark grayish brown (2.5Y 3/2) silt loam; weak medium granular structure parting to massive; friable; few very fine strong brown (7.5YR 4/6) redoximorphic concentrations; abrupt boundary.
19–47	Btg1	Light olive brown (2.5Y 5/3) silty clay loam; weak fine and medium subangular blocky structure; firm; abundant very fine and fine strong brown (7.5YR 4/6) redoximorphic concentrations; few fine manganese concretions; discontinuous clay skins on ped faces; clear boundary.
47–85	Btg2	Light olive gray (5Y 6/2) silty clay loam; moderate medium subangular blocky structure; plastic; abundant fine strong brown (7.5Yr 5/8) redoximorphic concentrations; common fine very dark gray (5Y 3/1) concentrations; discontinuous clay skins on ped faces; gradual boundary.
85–102	Btg3	Greenish gray (10Y 6/1) silty clay loam; moderate fine to medium subangular blocky structure; plastic; abundant fine reddish yellow (7.5YR 6/8) redoximorphic concentrations; common dark gray (5Y 4/1) clay skins on ped faces. End.

DESIGNATION: SP 2
LANDSCAPE POSITION: drainageway floor
PARENT MATERIAL: loess
VEGETATION: tall prairie grass, <10% GSV
METHOD: hand probe
DATE DESCRIBED: 11/22/2022
DESCRIBED BY: J. Skeens
COMMENTS: This profile was recorded from a low-lying portion of the drainageway floor in the southwest corner of the project area.

Depth (cm)	Soil Horizon	Description
0–19	Ap	Very dark gray (2.5Y 3/1) silt loam; massive; friable; few very fine roots; abrupt boundary.
19–40	A/AB	Very dark gray to dark gray (2.5Y 3/1–2.5Y 4/1) silt loam; weak fine and medium subangular blocky structure; friable; higher clay fraction with depth; common very fine strong brown (7.5YR 4/6) redoximorphic concentrations; gradual boundary.
40–73	Btg1	Light brownish gray (2.5Y 6/2) silty clay loam; moderate fine subangular blocky structure; firm; abundant fine strong brown (7.5YR 5/8) redoximorphic concentrations; very few very fine roots; gradual boundary.
73–120	Btg2	Gray (5Y 6/1) silty clay loam; moderate medium subangular blocky parting to fine prismatic structure; plastic; abundant fine strong brown to reddish yellow (7.5YR 5/8–7.5YR 6/8) redoximorphic concentrations; common fine light gray (5Y 7/1) depletions; clear boundary.

Depth (cm)	Soil Horizon	Description
120–140	BCg	Light gray (10Y 7/1) silty clay loam; moderate medium subangular blocky structure; firm; common very fine and fine strong brown (7.5YR 4/6) redoximorphic concentrations; clear boundary.
140–159	Cg	Light gray (10YR 7/1) clay loam; massive; firm; abundant very fine and fine strong brown (7.5YR 5/8) redoximorphic concentrations. End.

DESIGNATION: SP 3
LANDSCAPE POSITION: summit
PARENT MATERIAL: loess
VEGETATION: harvested corn residue, 70–90% GSV
METHOD: hand probe
DATE DESCRIBED: 11/22/2022
DESCRIBED BY: J. Skeens
COMMENTS: This profile was recorded from an isolated rise near the west-central perimeter of the project area.

Depth (cm)	Soil Horizon	Description
0–23	Ap	Very dark gray (10YR 3/1) and dark grayish brown (10YR 4/2) silt loam; massive; friable; few very fine roots; abrupt boundary.
23–43	Bw	Yellowish brown (10YR 5/4) silty clay loam; weak fine subangular blocky structure; friable to firm; few fine very dark grayish brown (10YR 3/2) concentrations; clear boundary.
43–80	Bt1	Yellowish brown to light yellowish brown (10YR 5/4–10YR 6/4) silty clay loam; weak fine and medium subangular blocky structure; firm; gradual boundary.
80–93	Bt2	Light yellowish brown to brownish yellow (10YR 6/4–10YR 6/6) silty clay loam; moderate medium subangular blocky structure; plastic; common very fine and fine strong brown (7.5YR 4/6) redoximorphic concentrations. End.

DESIGNATION: SP 4
LANDSCAPE POSITION: outwash terrace
PARENT MATERIAL: loess
VEGETATION: harvested corn residue, 50–70% GSV
METHOD: hand probe
DATE DESCRIBED: 11/22/2022
DESCRIBED BY: J. Skeens
COMMENTS: This profile was recorded from a level position near the center of the project area.

Depth (cm)	Soil Horizon	Description
0–25	Ap	Very dark gray (2.5Y 3/1) silt loam; massive; friable; very few very fine roots; abrupt boundary.
25–50	Bw	Light olive brown (2.5Y 5/3) silty clay loam; weak fine subangular blocky structure; firm; common very fine yellowish brown (10YR 5/6) redoximorphic concentrations; few fine manganese concretions; gradual boundary.
50–75	Bt1	Light yellowish brown (2.5Y 6/3) and dark gray (2.5Y 4/1) silty clay loam; moderate fine and medium subangular blocky structure; plastic; abundant fine strong brown (7.5Yr 5/8) redoximorphic concentrations; gradual boundary.
75–98	Bt2	Pale brown (2.5Y 7/3) clay loam; strong fine prismatic structure; plastic; abundant fine yellowish red (5YR 5/8) redoximorphic concentrations. End.

DESIGNATION: SP 5
LANDSCAPE POSITION: summit
PARENT MATERIAL: loess
VEGETATION: harvested corn residue, 70–90% GSV
METHOD: hand probe
DATE DESCRIBED: 11/22/2022
DESCRIBED BY: J. Skeens
COMMENTS: This profile was recorded from the highest elevation in the project area at the northeast corner.

Depth (cm)	Soil Horizon	Description
0–15	Ap	Very dark gray (10YR 3/1) and olive brown (10YR 4/3) loam; massive; firm; abrupt boundary.
15–33	Bt	Light yellowish brown (10YR 6/4) and light olive brown (10YR 5/3) silty clay loam; moderate fine and medium subangular blocky structure; plastic; very few very fine roots. End.

DESIGNATION: SP 6
LANDSCAPE POSITION: summit
PARENT MATERIAL: eolian deposits
VEGETATION: harvested corn residue, 70–90% GSV
METHOD: hand probe
DATE DESCRIBED: 11/22/2022
DESCRIBED BY: J. Skeens
COMMENTS: This profile was recorded from a linear rise extending northwest from Iowa Highway 22 along the south-central perimeter.

Depth (cm)	Soil Horizon	Description
0–24	Ap	Very dark gray (10YR 3/1) loam; massive; friable; abrupt boundary.
24–55	Bw1	Yellowish brown (10YR 5/4) and dark grayish brown (10YR 4/2) fine sandy loam; weak fine subangular blocky structure; friable to firm; clear boundary.
55–85	Bw2	Brownish yellow (10YR 6/6) fine loamy sand; very weak medium subangular blocky structure; very friable; few very fine roots; unknown boundary.
85–129	E/Bt	Brownish yellow (10YR 6/6–10YR 6/8) fine sand; very weak medium to coarse subangular blocky structure; very friable; common fine dark gray (10YR 4/1) clay loam ribbons. End.

APPENDIX B
National Archaeological Database Form

Database Doc Number:

NATIONAL ARCHAEOLOGICAL DATABASE – REPORTS; DATA ENTRY FORM

1. R and C #:
2. Authors: Skeens, Jeremy L.

Year of Publication 2022

3. Title Phase I Archeological Investigation for a Proposed Lone Tree Substation Location, Fremont Township, Johnson County, Iowa

---

4. Report Title: BCA Reports

Volume #: Report #: 3187-2 NTIS:
Publisher: Bear Creek Archeology, Inc.
Place: Cresco, Iowa 52136

---

5. Unpublished
Sent From:
Sent To:
Contract #:

---

6. Federal Agency:

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7. State: Iowa
County: Johnson
Town:

---

8. Work Type:

9. Keyword:

0 - Types of Resources / Features		1 - Generic terms / Research Questions	
2 - Taxonomic Names		3 - Artifact Types / Material Classes	
4 - Geographic Names / Locations		5 - Time Periods	
6 - Project Names / Study Unit		7 - Other Key Words	
Southern Iowa Drift Plain	[4]		[ ]
20.2 ha (49.9 ac)	[7]		[ ]
No sites	[7]		[ ]
	[ ]		[ ]
	[ ]		[ ]
	[ ]		[ ]
	[ ]		[ ]

---

10. UTM Zone:

15	Easting:		Northing:	
15	Easting:		Northing:	
15	Easting:		Northing:	
15	Easting:		Northing:	

---

11. Township: 77N
Range: 06W

Other Publication Types:

12. Monographs:
    Name: _____
    Place: _____

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13. Chapter: In: _____ First: _____ Last: _____

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14. Journal: Volume: _____ Issue: _____ First: _____ Last: _____

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15. Dissertation:
    Degree: Ph.D. LL.D. M.A. M.S. B.A. B.S. Institute _____

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16. Paper: Meeting: _____
    Place: _____ Date: _____

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17. Other:
    Reference Line: _____

---

18. Site #: _____ _____ _____ _____ _____ _____

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19. Quad Map: Name West Liberty SW, Iowa Date 1965
    Lone Tree, Iowa 1969

APPENDIX C
Agency Communication

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Illinois-Iowa Ecological Services Field Office
Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022
Phone: (309) 757-5800 Fax: (309) 757-5807

In Reply Refer To:
Project Code: 2022-0033218
Project Name: Lone Tree Site

April 19, 2022

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Illinois-Iowa Ecological Services Field Office
Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022
(309) 757-5800

Project Summary

Project Code: 2022-0033218
Event Code: None
Project Name: Lone Tree Site
Project Type: Acquisition of Lands
Project Description: Lone Tree Site, 1801476001, 36.40 acres
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.498983499999994,-91.4858634315035,14z

Counties: Johnson County, Iowa

Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Clams

NAME	STATUS
Higgins Eye (pearlymussel) *Lampsilis higginsii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5428	Endangered

Insects

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

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid *Platanthera leucophaea*	Threatened
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/601	
Western Prairie Fringed Orchid *Platanthera praeclara*	Threatened
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1669	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Wetlands

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

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

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

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPaC User Contact Information

Agency: Terracon
Name: Ian Bootsmiller
Address: 2640 12th Street
City: Cedar Rapids
State: IA
Zip: 52404
Email ian.bootsmiller@terracon.com
Phone: 3195418757

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Illinois-Iowa Ecological Services Field Office
Illinois & Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265-7022
Phone: (309) 757-5800 Fax: (309) 757-5807

In Reply Refer To:
Project code: 2022-0033218
Project Name: Lone Tree Site

May 18, 2022

Subject: Consistency letter for the 'Lone Tree Site' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Ian Bootsmiller:

The U.S. Fish and Wildlife Service (Service) received on May 18, 2022 your effects determination for the 'Lone Tree Site' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- Eastern Prairie Fringed Orchid *Platanthera leucophaea* Threatened

- Higgins Eye (pearlymussel) *Lampsilis higginsii* Endangered
- Indiana Bat *Myotis sodalis* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate
- Western Prairie Fringed Orchid *Platanthera praeclara* Threatened

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Lone Tree Site

2. Description

The following description was provided for the project 'Lone Tree Site':

> Lone Tree Site, 1801476001, 36.40 acres

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.498983499999994,-91.4858634315035,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/media/nleb-roost-tree-and-hibernacula-state-specific-data-links-0.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type ‘0’ in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type ‘0’ in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type ‘0’ in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type ‘0’ in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

IPaC User Contact Information

Agency: Terracon
Name: Ian Bootsmiller
Address: 2640 12th Street
City: Cedar Rapids
State: IA
Zip: 52404
Email ian.bootsmiller@terracon.com
Phone: 3195418757

Smith, Jordan M

From: seth.moore@dnr.iowa.gov
Sent: Thursday, April 21, 2022 3:42 PM
To: Bootsmiller, Ian
Subject: 2022-0809 Environmental Review Request - Lone Tree

41.4990/-91.4859; Johnson County
Sec. 6/T77N/R05W

Thank you for inviting Department comment on the impact of this project. The Department has searched for records of rare species and significant natural communities in the project area and found no site-specific records that would be impacted by this project. However, these records and data are not the result of thorough field surveys. If listed species or rare communities are found during the planning or construction phases, additional studies and/or mitigation may be required.

This letter is a record of review for protected species, rare natural communities, state lands and waters in the project area, including review by personnel representing state parks, preserves, recreation areas, fisheries and wildlife but does not include comment from the Environmental Services Division of this Department. This letter does not constitute a permit. Other permits may be required from the Department or other state or federal agencies before work begins on this project.

If you have questions about this letter or require further information, please contact me at (515) 330-6432.

Environmental Review requests can be submitted electronically to: SLER@dnr.iowa.gov.

Sincerely,

Seth Moore | Environmental Specialist
Iowa Department of Natural Resources
P 515-330-6432 | F 515-725-8202 | 502 E. 9th St., Des Moines, IA 50319
www.iowadnr.gov

APPENDIX D
Photographic Documentation

PHOTOGRAPHIC DOCUMENTATION
Lone Tree
Photos Taken: 04/27/2022

Photo 1: View of the site looking northeast at the east adjoining residential property.

Photo 2: View of the site looking east at the east adjoining residential property.

Photo 3: View of site looking south.

Photo 4: View of south adjoining agricultural field.

PHOTOGRAPHIC DOCUMENTATION
Lone Tree
Photos Taken: 04/27/2022

Photo 5: View of the site looking west at the west adjoining wooded area.

Photo 6: View of tributary running through the site.

Photo 7: View of north adjoining agricultural land and wooded area.

Photo 8: View of tributary running through the site, near the Highway 22.

APPENDIX E
Wetland Determination Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Conifer Power - Lone Tree City/County: Lone Tree/Johnson Sampling Date: 4/27/22

Applicant/Owner: Conifer Power State: IA Sampling Point: DP-1

Investigator(s): Jordan Smith Section, Township, Range: S1 T77N R06W

Landform (hillside, terrace, etc.): Drainage Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41°29'48.57" Long: 91°29'10.54" Datum: IA State Plane North

Soil Map Unit Name: Sperry silt loam (122) NWI classification: PEM1B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (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 ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Data point taken in field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Rhamnus cathartica*	10	Yes	FAC
2.			
3.			
4.			
5.			
	10 =Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	90	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		210 (B)
Prevalence Index = B/A =			2.10

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Presented as Photo # 1 in Appendix C.

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
0-16	10YR 2/1	85	5YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations
16-32	10YR 2/1	100					Sandy	

[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)
- X 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 soil present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X 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 X	No ___	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 6

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

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

Remarks:
Wetland hydrology present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Conifer Power- Lone Tree City/County: Lone Tree/Johnson Sampling Date: 4/27/22

Applicant/Owner: Conifer Power State: IA Sampling Point: DP -2

Investigator(s): Jordan Smith Section, Township, Range: S1 T77N R06W

Landform (hillside, terrace, etc.): Field Local relief (concave, convex, none): None

Slope (%): 1 Lat: 41°29"48.71" Long: 91°29'10.33" Datum: IA State Plane North

Soil Map Unit Name: Sperry silt loam (122) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (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 ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Taken in field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Digitaria sanguinalis*	70	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	70	x 4 =	280
UPL species	0	x 5 =	0
Column Totals:	70 (A)		280 (B)

Prevalence Index = B/A = 4.00

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** X

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation not present. Shown as Photo # 2 in Appendix C.

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
0-11	10YR 3/2	100					Loamy/Clayey	
11-32	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 soil not present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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? Yes X No ___ Depth (inches): 20

(includes capillary fringe)

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

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

Remarks:
Wetland hydrology present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Lone Tree Wetland- WOTUS Delineation City/County: Johnson, Iowa Sampling Date: 4/27/2022

Applicant/Owner: Conifer Power State: IA Sampling Point: DP-3

Investigator(s): Jordan Smith Section, Township, Range: S1 T77N R06W

Landform (hillside, terrace, etc.): Drainage Local relief (concave, convex, none): Concave

Slope (%): 1 Lat: 41°29'53.00" Long: 91°29'16.61" Datum: Iowa State Plane North

Soil Map Unit Name: Sperry silt loam (122) NWI classification: PEM1B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (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 ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** X **No** ____

Remarks:
Taken in drainage swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 15)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix interior*	5	Yes	FACW
2.			
3.			
4.			
5.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 10)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Urtica dioica*	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75	=Total Cover	
Woody Vine Stratum (Plot size: 5)			
1. *Vitis vulpina*	2	No	FAC
2.			
	2	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	82 (A)		166 (B)

Prevalence Index = B/A = 2.02

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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 present. Shown as Photo # 3 in Appendix C.

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
0-13	10YR 2/1	93	5YR 4/6	7	C	PL	Loamy/Clayey	Prominent redox concentrations
13-32	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)
- X 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 soil present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 18
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 1

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

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

Remarks:
Wetland hydrology present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Lone Tree Wetland-WOTUS Delineation City/County: Johnson, Iowa Sampling Date: 4/27/2022

Applicant/Owner: Conifer Power State: IA Sampling Point: DP-4

Investigator(s): Jordan Smith Section, Township, Range: S1 T77N R06W

Landform (hillside, terrace, etc.): Field Local relief (concave, convex, none): None

Slope (%): 1 Lat: 41°29'52.76" Long: 91°29'16.71" Datum: Iowa State Plane North

Soil Map Unit Name: Sperry silt loam (122) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (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 ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Taken in Field.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5)			
1. *Digitaria sanguinalis*	60	Yes	FACU
2. *Artemisia annua*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	80 (A)		320 (B)

Prevalence Index = B/A = 4.00

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 X

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation not present. Shown as Photo # 4 in Appendix C.

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
0-7	10YR 4/3	100					Loamy/Clayey	
7-32	10YR 3/2	100					Sandy	

[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:

No hydric soil present. DP-4 out

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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? Yes X No ___ Depth (inches): 13

(includes capillary fringe)

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

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

Remarks:

Wetland hydrology present.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Lone Tree Wetland- WOTUS Delineation City/County: Johnson, Iowa Sampling Date: 4/27/2022

Applicant/Owner: Conifer Power State: IA Sampling Point: DP 5

Investigator(s): Jordan Smith Section, Township, Range: S1 T77N R06W

Landform (hillside, terrace, etc.): Swale Local relief (concave, convex, none): Very slightly convex

Slope (%): 2 Lat: 41°30'00.55" Long: 91°29'17.00" Datum: Iowa State Plane North

Soil Map Unit Name: Sperry silt loam (122) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (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 ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Point taken in unfarmed field swale between two fields. DP-5.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5)			
1. *Elymus curvatus*	100	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 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. Presented as Photo # 5 in Appendix C.

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
0-4	10YR 3/2	100					Loamy/Clayey	
4-20	10YR 5/6	100					Loamy/Clayey	
20-32	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 soil not present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X 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 X	No ___	Depth (inches): 22
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 5

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

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

Remarks:
Wetland hydrology present.