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MEMORANDUM

Date: June 2, 2020
From: Mark Perry, Natural Resources Specialist
Subject: Redwood Falls SE Development Study Area
Keith Muetzel, City Administrator, City of Redwood Falls
BMI Project No.: S17121459

The City of Redwood Falls is evaluating two parcels of land for future housing and industrial development. The parcels of land are located in Paxton Township, Sections 5 and 8 of Township 112 North, Range 35 West. As part of the proposed development study an off-site assessment for determining the existence of wetlands on the property was completed. This assessment included the review of the following items:

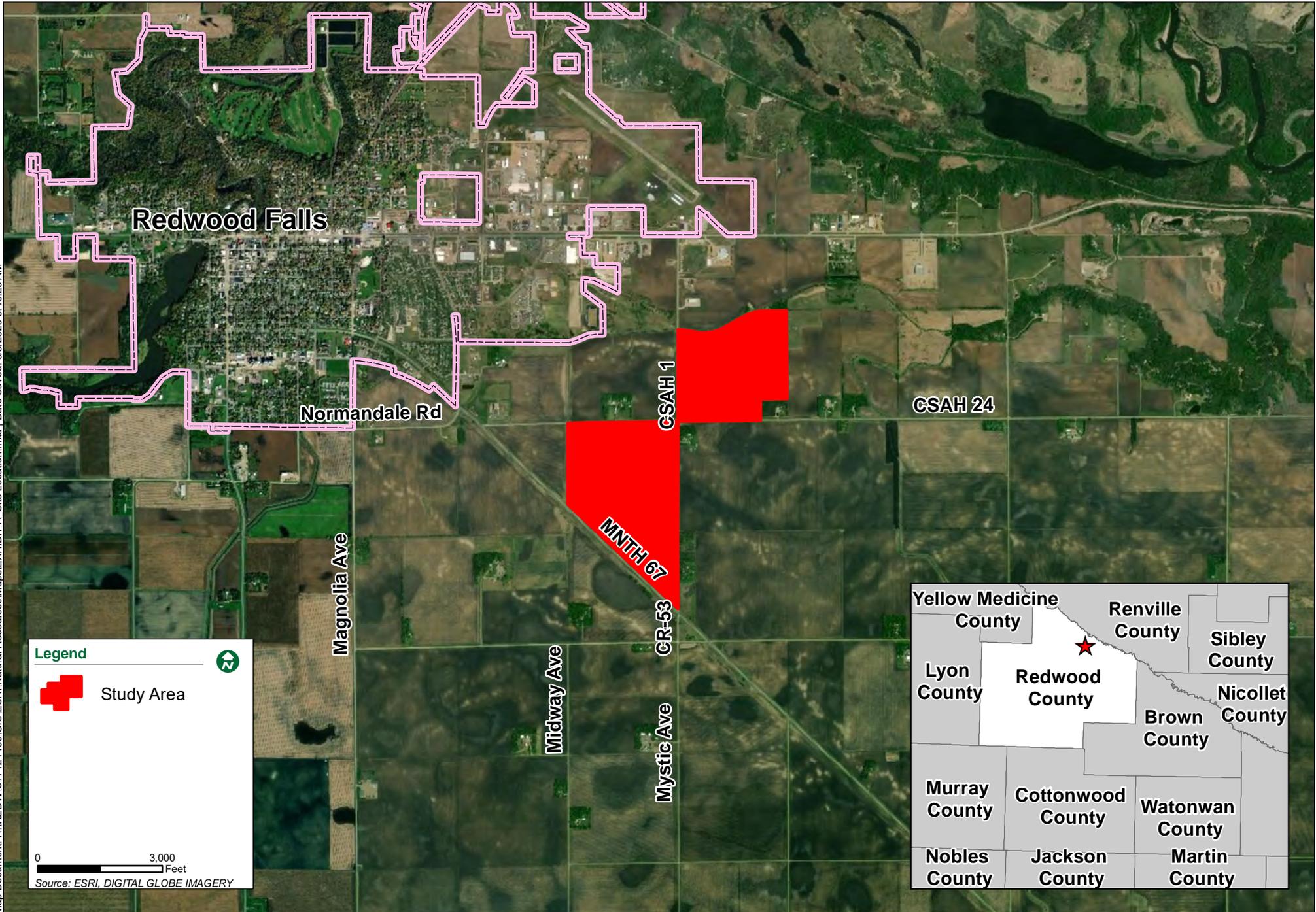
- Location Map (Exhibit A)
- Two foot LiDAR contours (Exhibit B).
- The National Wetland Inventory (Exhibit C).
- The Public Waters Inventory (Exhibit D).
- The Redwood County Soil Survey (Exhibit E).
- Off-Site Hydrology Assessment Forms (Exhibit F)
- Historical Imagery (Exhibits G1 through G8)
- Preliminary Wetland Areas (Exhibit I)

According to the off-site assessment, the study area was entirely in farm production. Section 5 is bounded on the south and west by roadway and the north by a drainage ditch. Section 8 is bounded on 3 sides by road and one side by a drainage ditch. The soil survey indicates that the soils are mostly hydric soils. Review areas were identified using the hydric soil and the contour information. The review of aerial photos from 1984 to 2017 indicates that both fields are adequately drained to remove most of the hydrology.

The field in section 5 has two small areas that appear to have enough hydrology in most years (64%) to qualify as wetland (Sites 12 and 13). (See Decision Matrix on Exhibit F1). Section 8 has 1 area that appears to have hydrology in enough years (37%) to qualify as wetland (Site 8) (See Decision Matrix on Exhibits F2). The other areas reviewed lacked wet signatures or had too few signatures in "Normal" years to consider to be wetland (see Exhibits F and G).

Using methods described in the “Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)”, it has been concluded that 3 wetlands exist within the study area being considered for development. The attached exhibits illustrate the findings of this study.

The findings of this study do not accurately delineate any wetlands that may exist on site. The boundaries provided are an estimate of wetland that may exist. In order to verify these boundaries and quantify any impacts a field review is required.



Legend

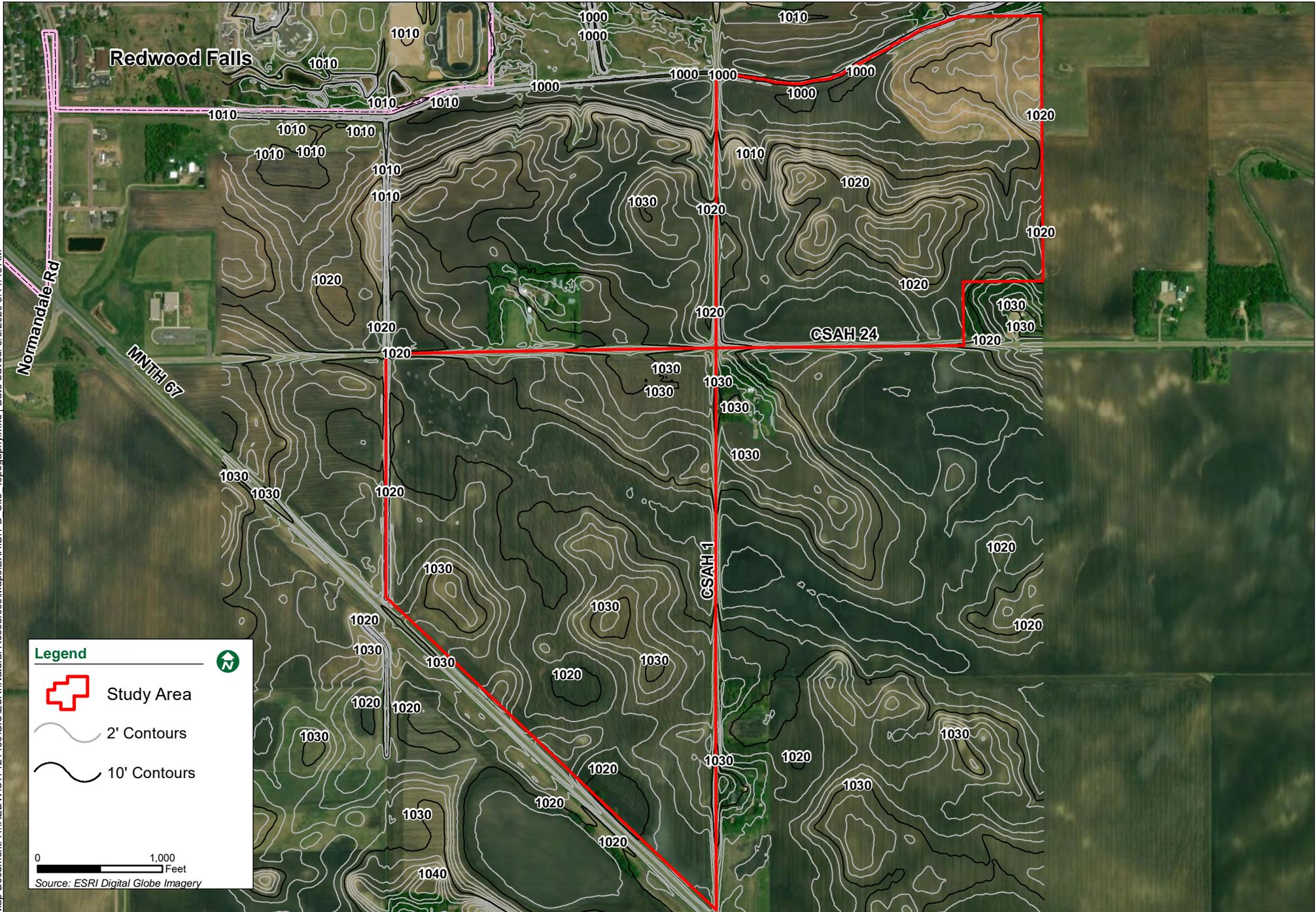
Study Area

0 3,000 Feet

Source: ESRI, DIGITAL GLOBE IMAGERY



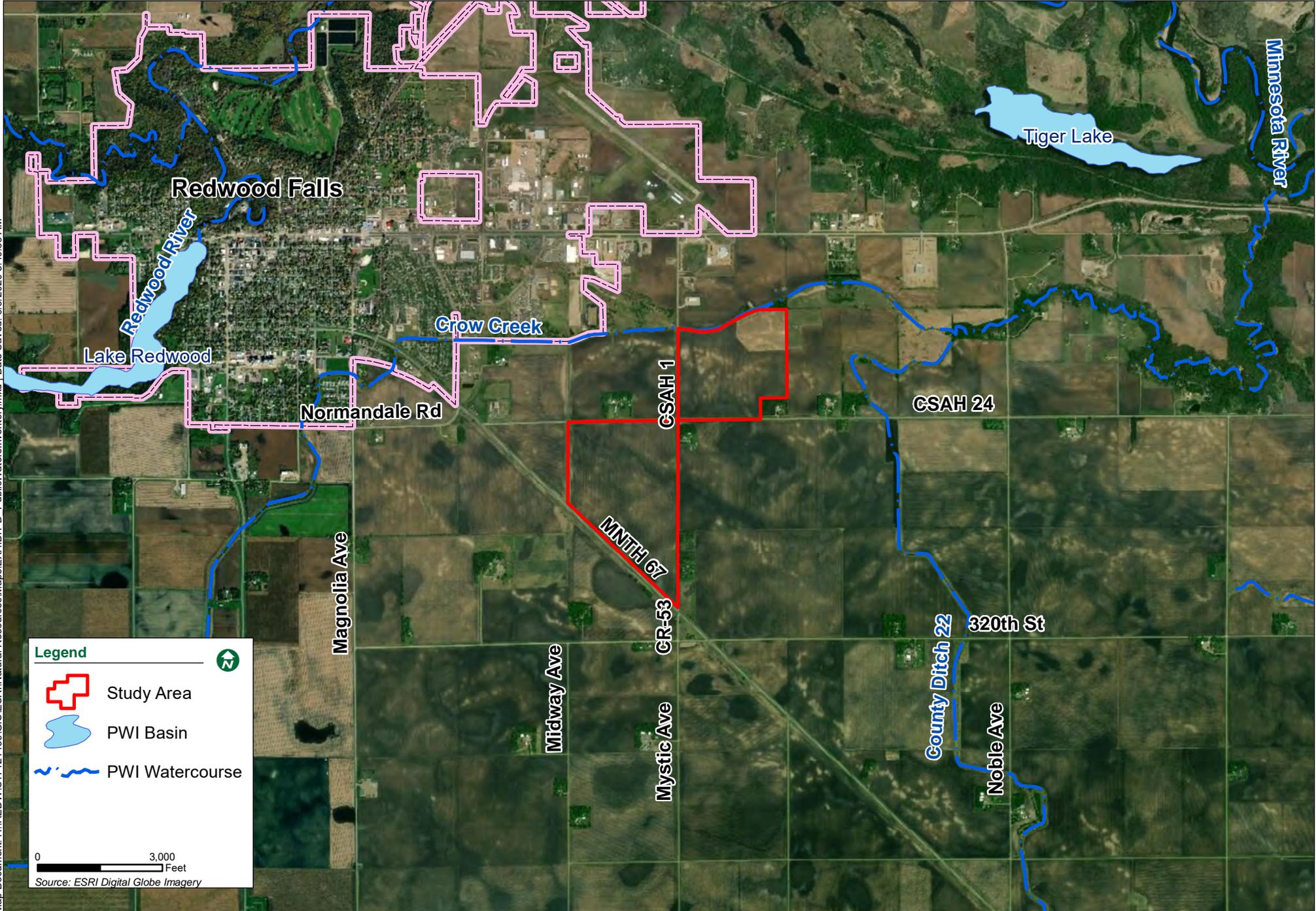
Map Document: H:\REDWOOD\17121459\GIS\ESRI\Natural Resources\Maps\EXHIBIT A - Site Location.mxd | Date Saved: 6/3/2020 8:48:29 AM



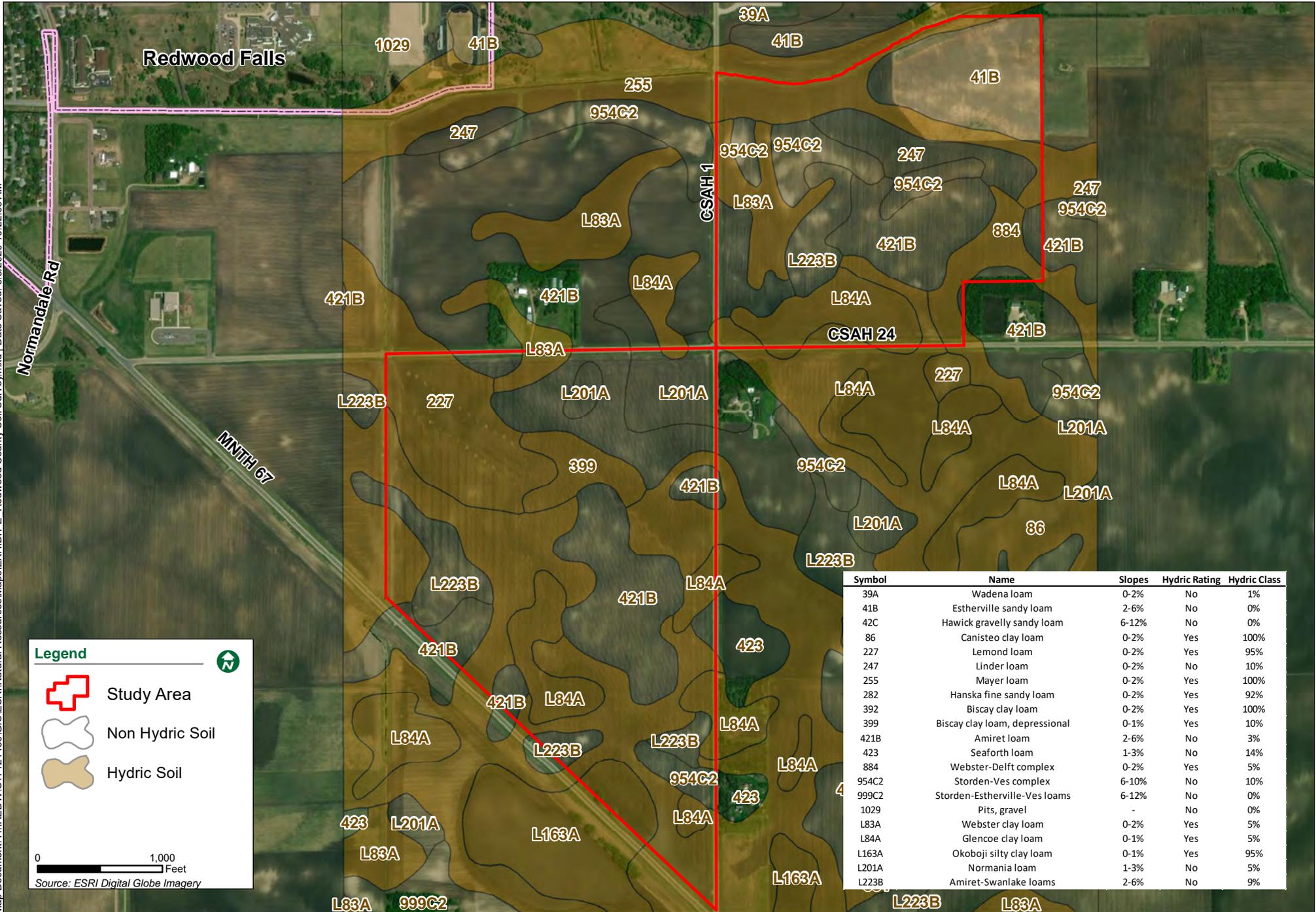
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Legend

- Study Area
- Non Hydric Soil
- Hydric Soil

0 1,000 Feet
Source: ESRI Digital Globe Imagery

Symbol	Name	Slopes	Hydric Rating	Hydric Class
39A	Wadena loam	0-2%	No	1%
41B	Estherville sandy loam	2-6%	No	0%
42C	Hawick gravelly sandy loam	6-12%	No	0%
86	Canisteo clay loam	0-2%	Yes	100%
227	Lemond loam	0-2%	Yes	95%
247	Linder loam	0-2%	No	10%
255	Mayer loam	0-2%	Yes	100%
282	Hanska fine sandy loam	0-2%	Yes	92%
392	Biscay clay loam	0-2%	Yes	100%
399	Biscay clay loam, depressional	0-1%	Yes	10%
421B	Amiret loam	2-6%	No	3%
423	Seaforth loam	1-3%	No	14%
884	Webster-Delft complex	0-2%	Yes	5%
954C2	Storden-Ves complex	6-10%	No	10%
999C2	Storden-Estherville-Ves loams	6-12%	No	0%
1029	Pits, gravel	-	No	0%
L83A	Webster clay loam	0-2%	Yes	5%
L84A	Glencoe clay loam	0-1%	Yes	5%
L163A	Okoboji silty clay loam	0-1%	Yes	95%
L201A	Normania loam	1-3%	No	5%
L223B	Amiret-Swanlake loams	2-6%	No	9%

Map Document: H:\REDWIN\17121459\GIS\ESRI\Natural Resources\Maps\EXHIBIT E - Redwood County Soil Survey.mxd | Date Saved: 6/8/2020 10:22:09 AM



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EXHIBIT F: OFF-SITE HYDROLOGY ASSESSMENT RECORDING FORM

Project/Site: Redwood Falls Site City/County: Redwood Falls/Redwood Date: 6/1/2020
 Applicant/Owner: Redwood Falls State: Minnesota
 Investigator(s): Mark Perry Sec, Twp, Ran: 5-112-35
 WETS Station ID: Redwood-Paxton-Redwood Falls

Date:	Source:	Climatic Condition:	Image Interpretations							
			Site 9	Site 10	Site 11	Site 12	Site 13	Site 6	Site 7	Site 8
1979										
1980										
1981										
1982										
1983										
1984	FSA	Wet	WS	WS	WS	DO	NV			
1985	FSA	Wet	NV	WS	NV	AP	WS			
1986	FSA	Wet	NV	NV	NV	AP	WS			
1987	FSA	Dry	NV	NV	NV	AP	NV			
1988	FSA	Dry	NV	NV	NV	WS	WS			
1989	FSA	Normal	NV	NV	NV	WS	NV			
1990	FSA	Normal	WS	NV	NV	WS	WS			
1991	FSA	Wet	WS	WS	NV	AP	WS			
1992	FSA									
1993	FSA									
1994	FSA	Dry	NV	NV	NV	WS	WS			
1995	FSA	Wet	WS	NV	WS	AP	NV			
1996	FSA	Normal	NV	NV	NV	NV	NV			
1997	FSA	Dry	NV	NV	NV	NV	NV			
1998	FSA	Normal	NV	NV	NV	CS	WS			
1999	FSA	Normal	NV	NV	NV	NV	WS			
2000	FSA	Dry	WS	WS	NV	NV	NV			
2001										
2002										
2003	FSA	Dry	NV	NV	NV	WS	NV			
2004										
2005										
2006	FSA	Normal	NV	NV	NV	WS	NV			
2007										
2008	FSA	Normal	NV	NV	NV	DO	NV			
2009	FSA	Dry	NV	NV	NV	WS	WS			
2010	FSA	Normal	NV	NV	NV	WS	WS			
2011										
2012										
2013	FSA	Normal	NV	NV	NV	NV	WS			
2014										
2015	FSA	Normal	NV	NV	NV	AP	WS			
2016										
2017	FSA	Normal	NV	NV	NV	AP	WS			
Hydric Soil			Yes	Yes	Yes	Yes	Yes			
NWI			No	No	No	Yes	No			
Normal Years			11	11	11	11	11			
Wet Signatures			1	0	0	7	7			
Percent Wet Signatures			9.1%	0.0%	0.0%	63.6%	63.6%	0.0%	0.0%	0.0%
Field Verification required			No	No	No	No	No			

NV - Normal Vegetation, WS - Wet Signature, CS - Crop Stress, DO - Drown Out, SW - Standing Water, AP - Altered Pattern, NC - Not Cropped

Decision Matrix					Decision Table					
Hydric soil	NWI	% Wet	Field visit?	Wetland?	Site	Hydric soil	NWI	% Wet	Field Hydro	ID #
Yes	Yes	>50%	No	Yes	9	Yes	No	0.09090909	No	No
Yes	Yes	30-50%	No	Yes	10	Yes	No	0	No	No
Yes	Yes	<30%	Yes	Yes, w/field hydro	11	Yes	No	0	No	No
Yes	No	>50%	No	Yes	12	Yes	Yes	0.63636364	Yes	Yes
Yes	No	30-50%	Yes	Yes, w/field hydro	13	Yes	No	0.63636364	Yes	Yes
Yes	No	<30%	No	No	6	0	0	0		
No	Yes	>50%	No	Yes	7	0	0	0		
No	Yes	30-50%	No	Yes	8	0	0	0		
No	Yes	<30%	Yes	No						
No	No	>50%	Yes	Yes, w/field hydro						
No	No	30-50%	Yes	Yes, w/field hydro						
No	No	<30%	No	No						



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Project/Site: Redwood Falls Site City/County: Redwood Falls/Redwood Date: 6/1/2020
 Applicant/Owner: Redwood Falls State: Minnesota
 Investigator(s): Mark Perry Sec, Twp, Ran: 8-112-35
 WETS Station ID: Redwood-Paxton-Redwood Falls

Date:	Source:	Climatic Condition:	Image Interpretations							
			Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
1979										
1980										
1981										
1982										
1983										
1984	FSA	Wet	NV	WS	NV	DO	DO	WS	NV	NV
1985	FSA	Wet	WS	WS	NV	NV	WS	WS	NV	NV
1986	FSA	Wet	NV	NV	NV	NV	NV	NV	NV	NV
1987	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1988	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1989	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1990	FSA	Normal	NV	NV	WS	DO	DO	NV	NV	DO
1991	FSA	Wet	WS	NV	WS	WS	WS	WS	NV	DO
1992	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1993	FSA	Wet	NV	NV	NV	WS	NV	NV	NV	NC
1994	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1995	FSA	Wet	NV	WS	NV	NV	WS	WS	NV	NV
1996	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1997	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1998	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1999										
2000	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
2001										
2002										
2003	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
2004										
2005										
2006	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	WS
2007										
2008	FSA	Normal	WS	WS	WS	NV	NV	NV	NV	NV
2009	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
2010	FSA	Normal	WS	NV	WS	DO	NV	WS	NV	DO
2011										
2012										
2013	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
2014										
2015	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
2016										
2017	FSA	Normal	WS	NV	NV	NV	NV	WS	WS	WS
Hydric Soil			Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
NWI			No	No	No	No	No	No	No	Yes
Normal Years			11	11	11	11	11	11	11	11
Wet Signatures			3	1	3	2	1	2	1	4
Percent Wet Signatures			27.3%	9.1%	27.3%	18.2%	9.1%	18.2%	9.1%	36.4%
Field Verification required			No	No	No	No	No	No	No	Yes

NV - Normal Vegetation, WS - Wet Signature, CS - Crop Stress, DO - Drown Out, SW - Standing Water, AP - Altered Pattern, NC - Not Cropped

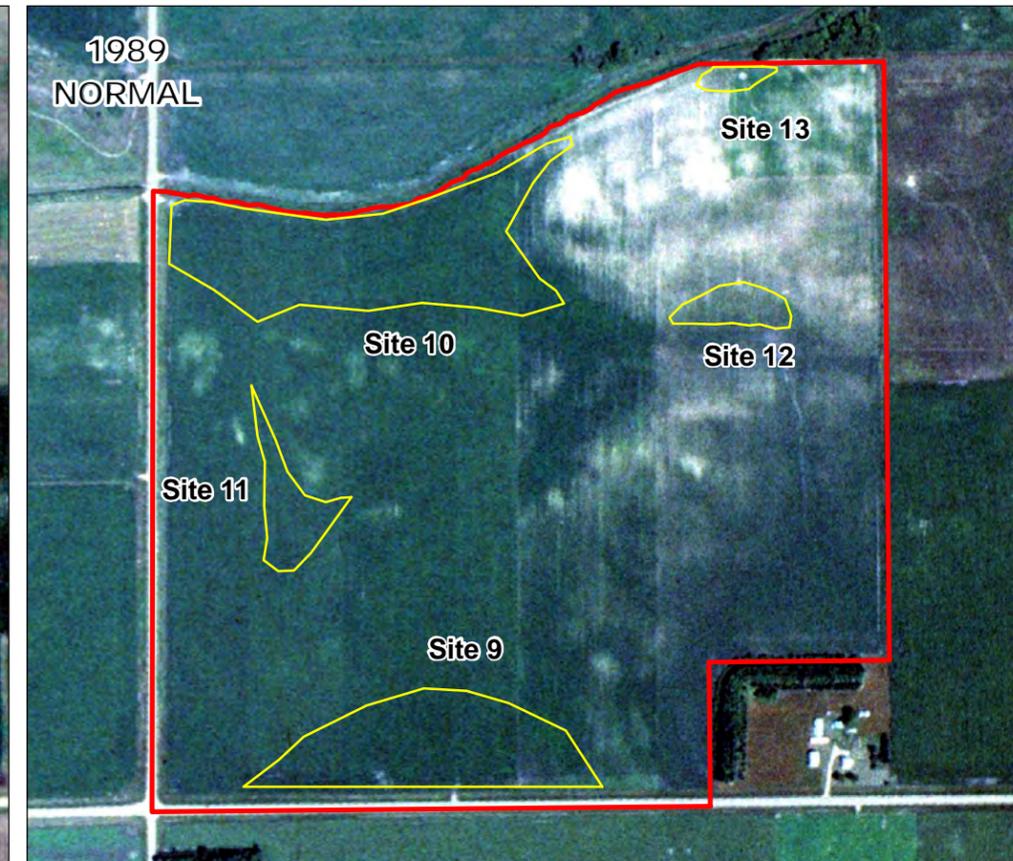
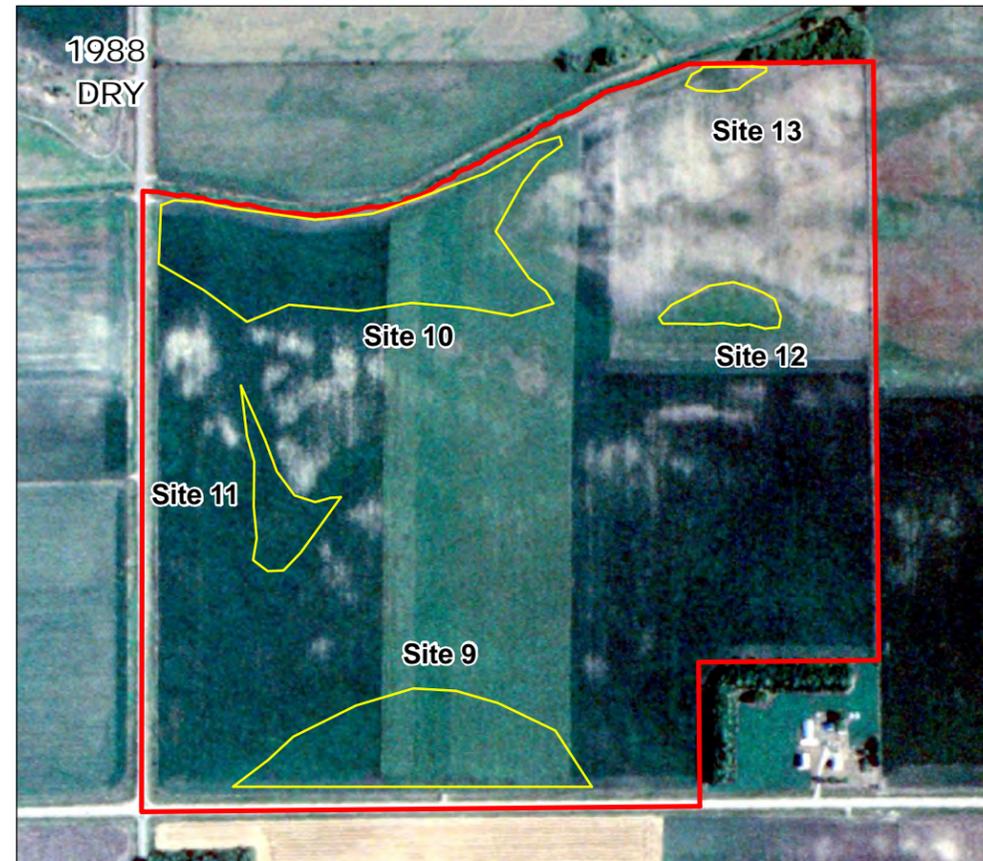
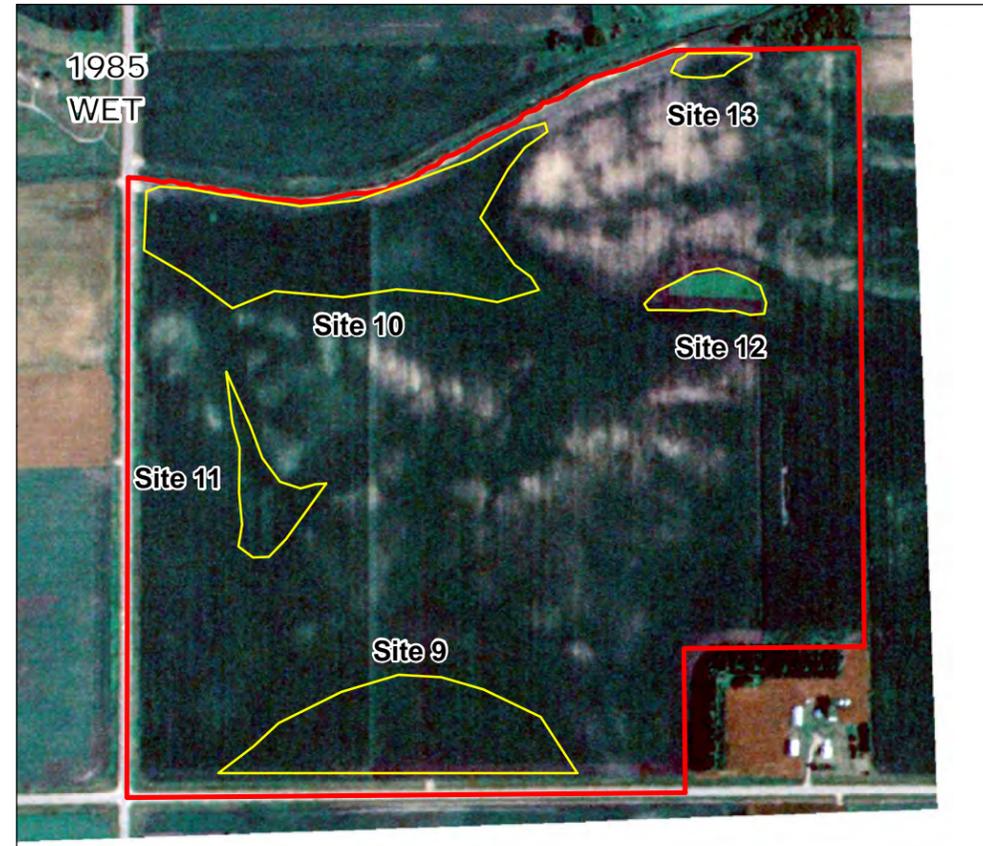
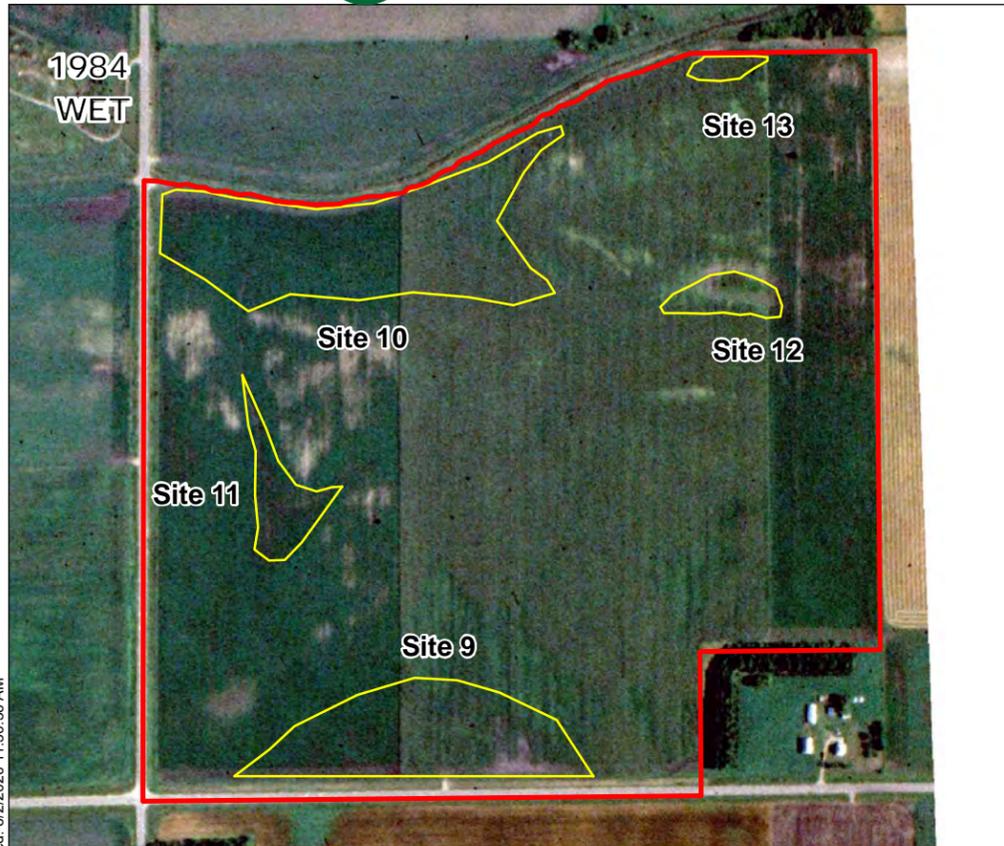
Decision Matrix					Decision Table					
Hydric soil	NWI	% Wet	Field visit?	Wetland?	Site	Hydric soil	NWI	% Wet	Field Hydro	ID #
Yes	Yes	>50%	No	Yes	1	Yes	No	0.27272727	No	No
Yes	Yes	30-50%	No	Yes	2	Yes	No	0.09090909	No	No
Yes	Yes	<30%	Yes	Yes, w/field hydro	3	Yes	No	0.27272727	No	No
Yes	No	>50%	No	Yes	4	Yes	No	0.18181818	No	No
Yes	No	30-50%	Yes	Yes, w/field hydro	5	Yes	No	0.09090909	No	No
Yes	No	<30%	No	No	6	Yes	No	0.18181818	No	No
No	Yes	>50%	No	Yes	7	No	No	0.09090909	No	No
No	Yes	30-50%	No	Yes	8	Yes	Yes	0.36363636	Yes	Yes
No	Yes	<30%	Yes	Yes, w/field hydro						
No	No	>50%	Yes	Yes, w/field hydro						
No	No	30-50%	Yes	Yes, w/field hydro						
No	No	<30%	No	No						



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Source: FSA

June 2020

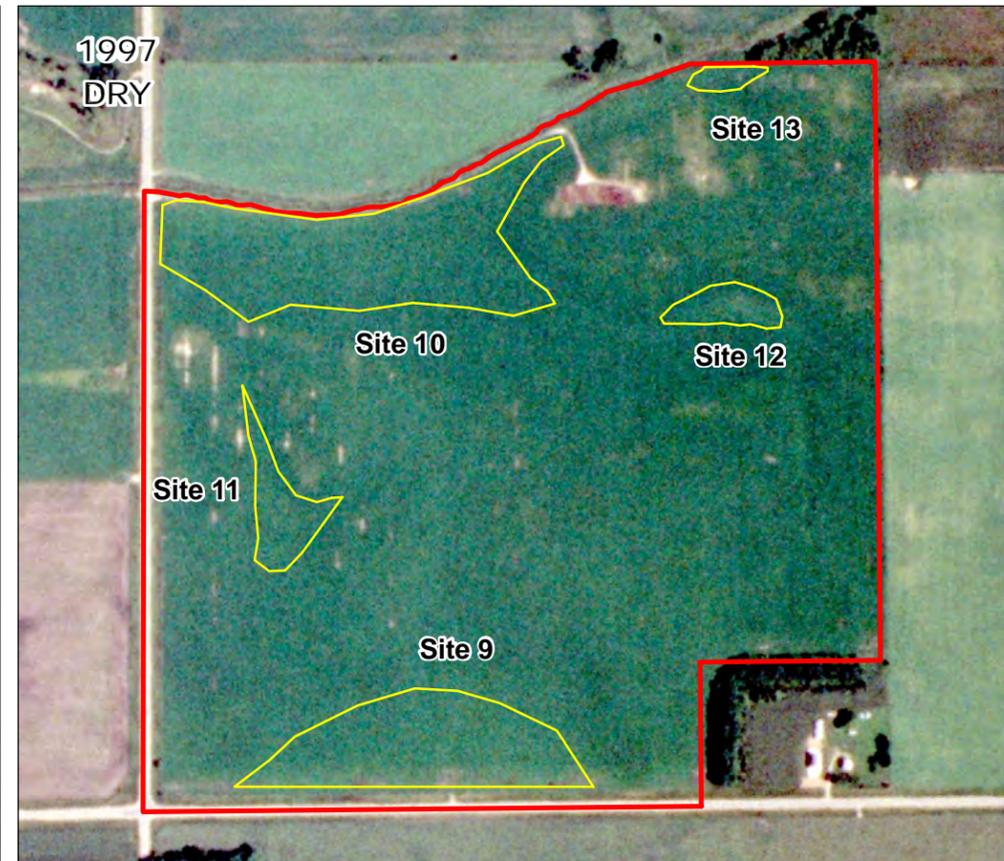
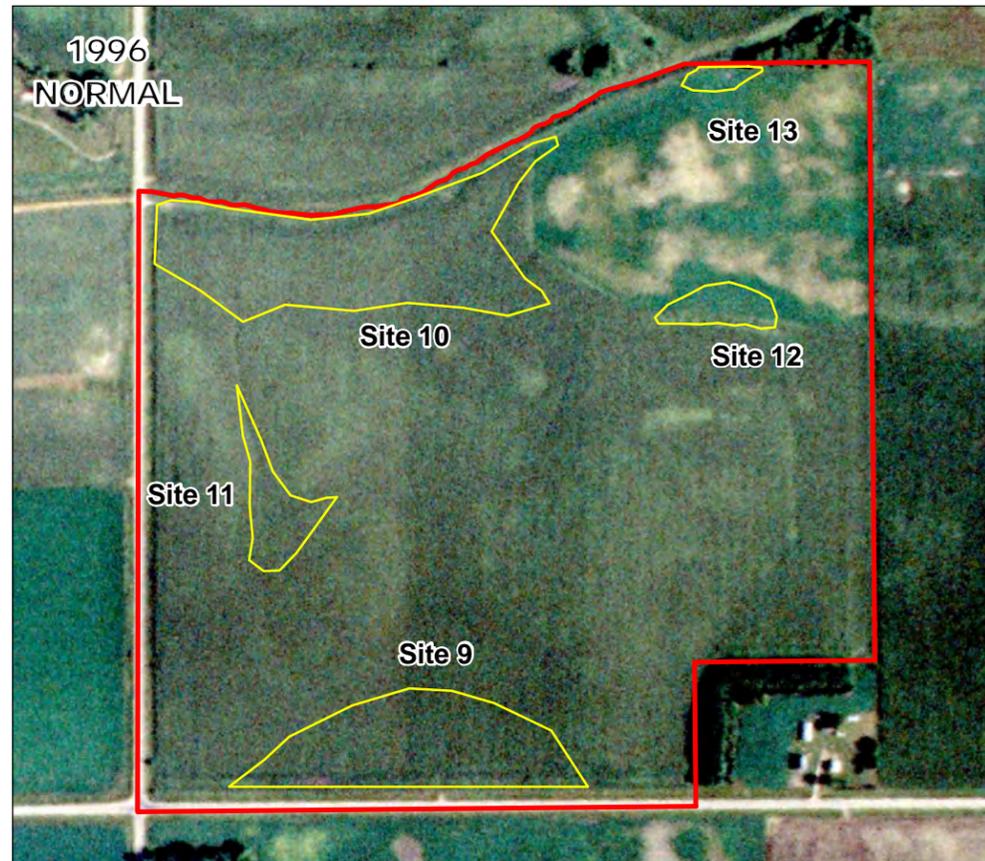
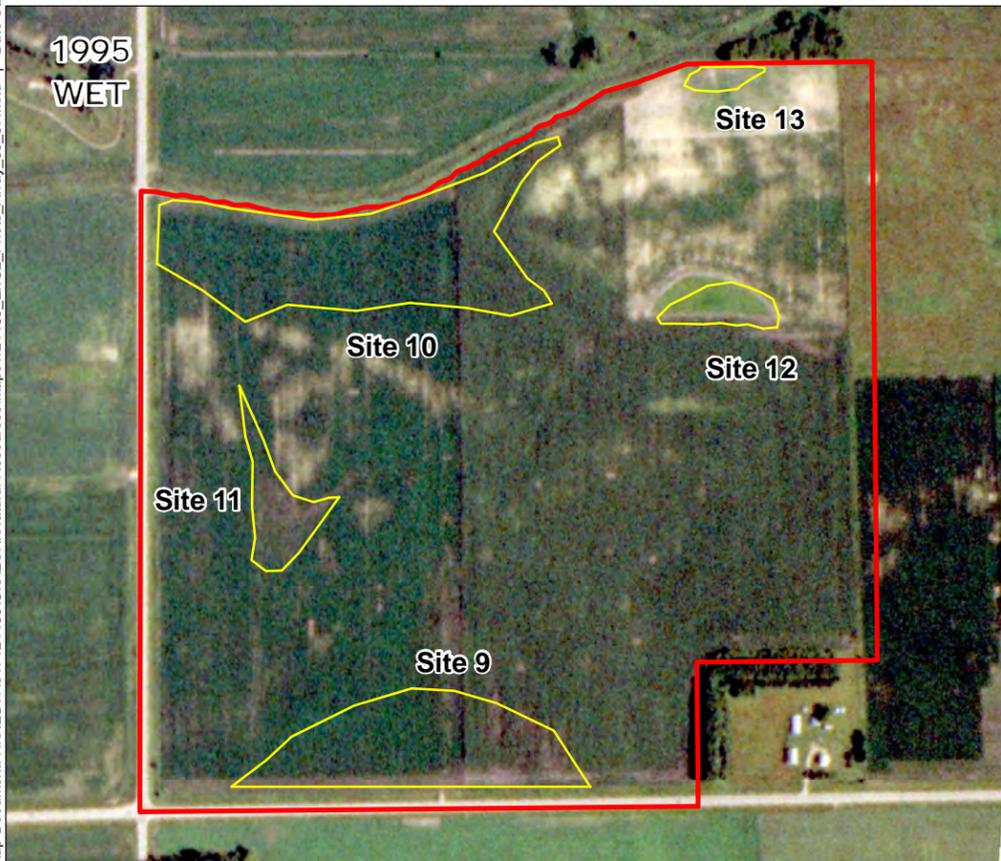
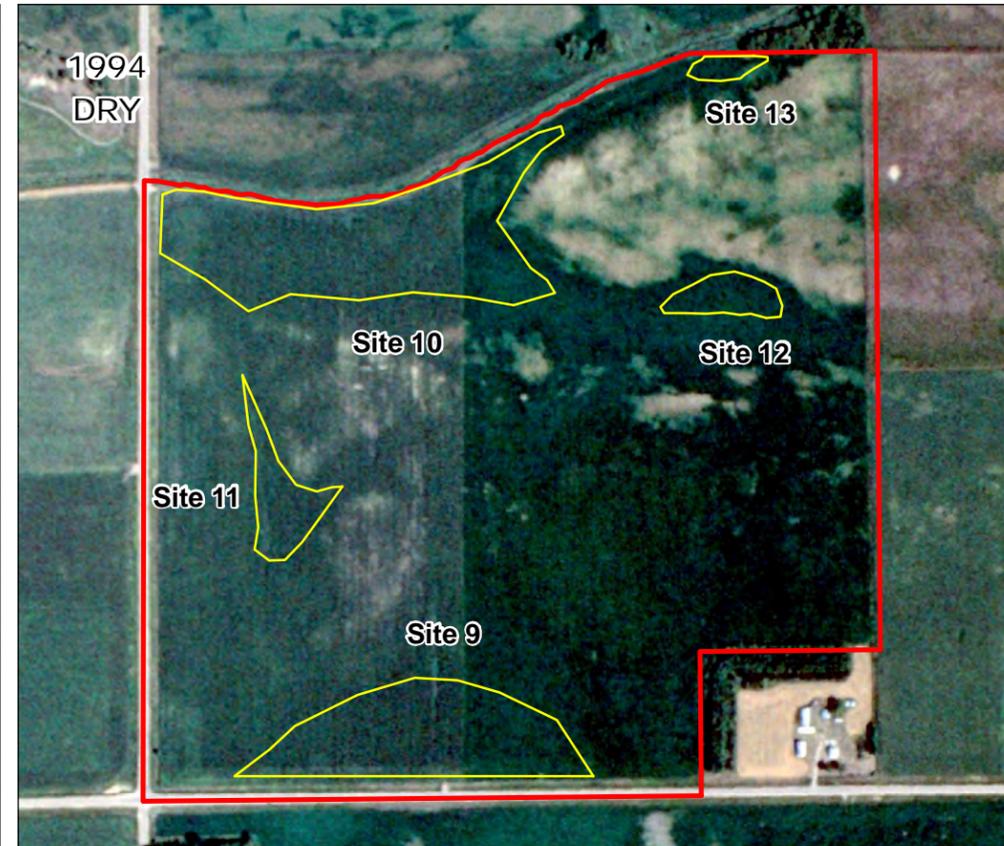
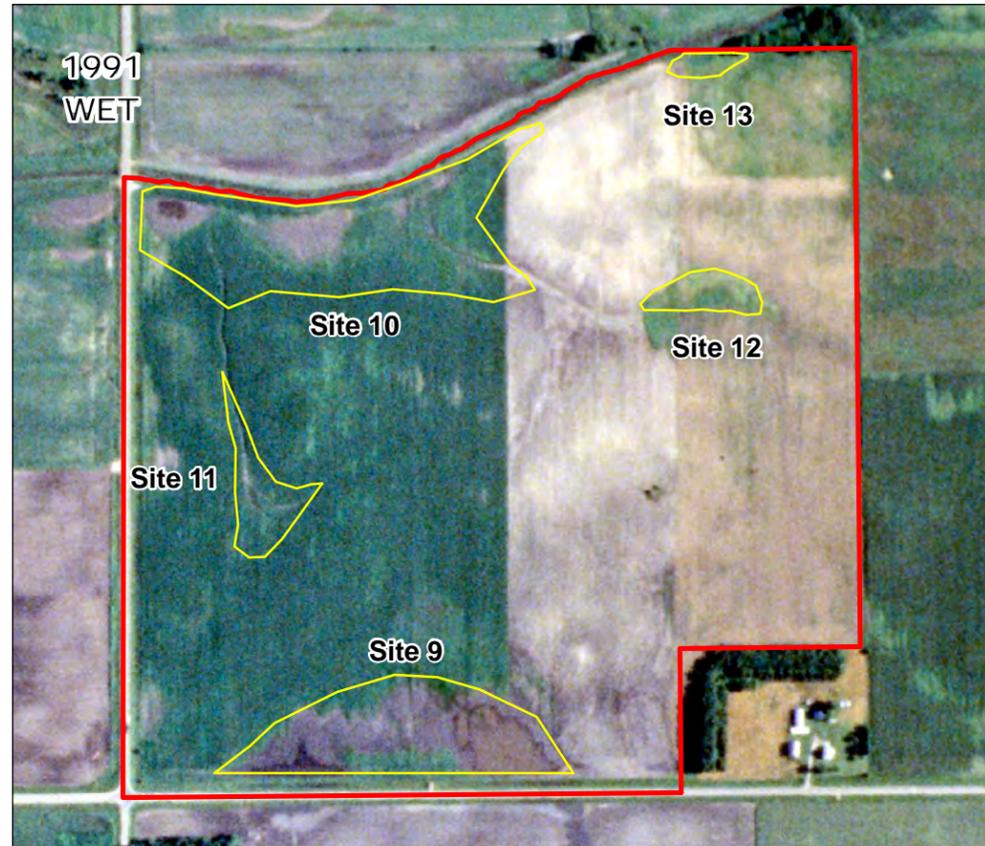




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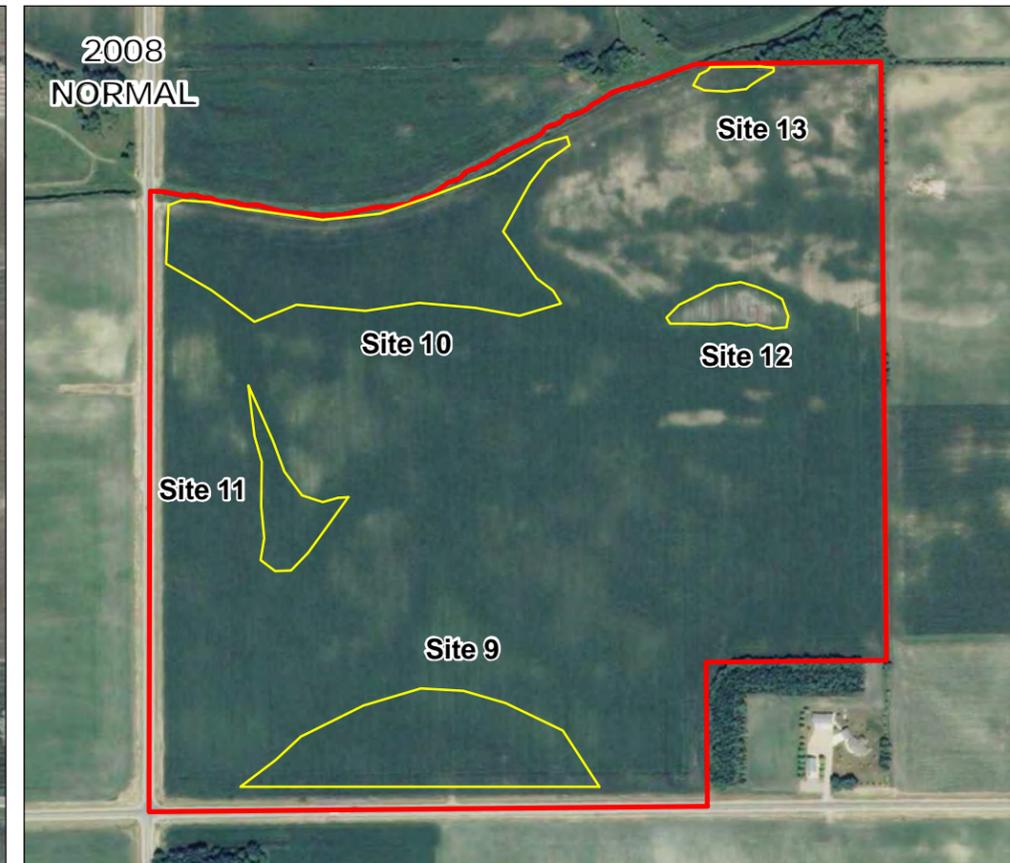
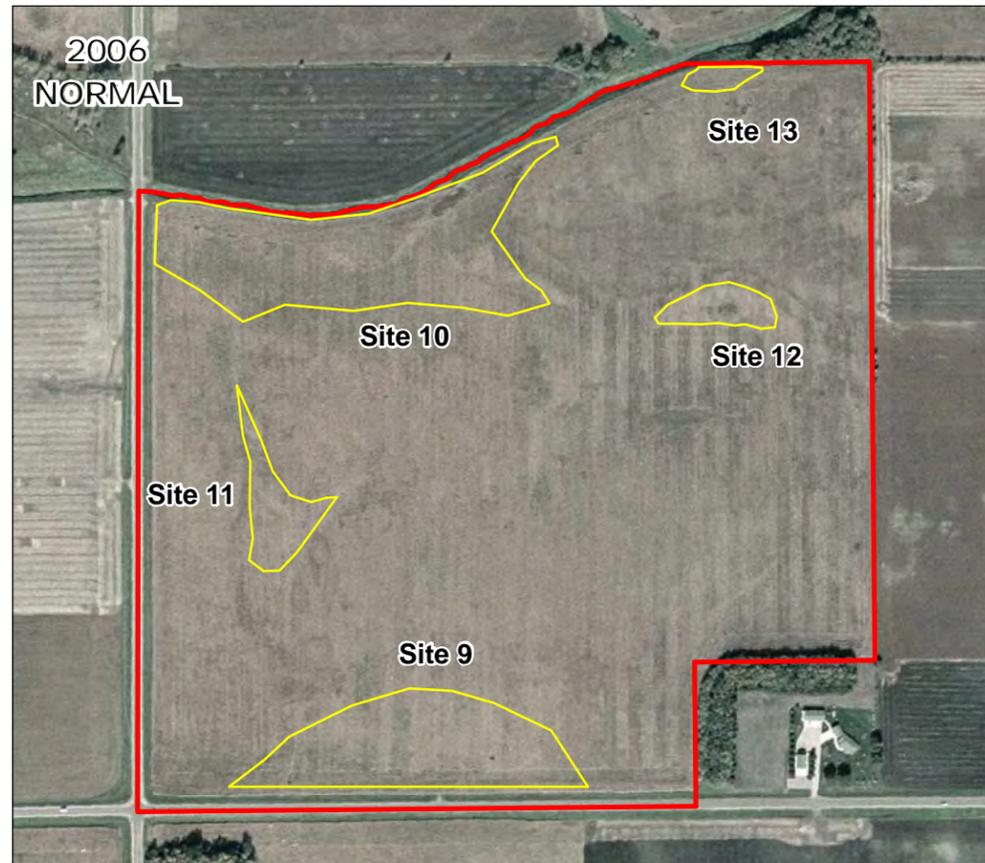
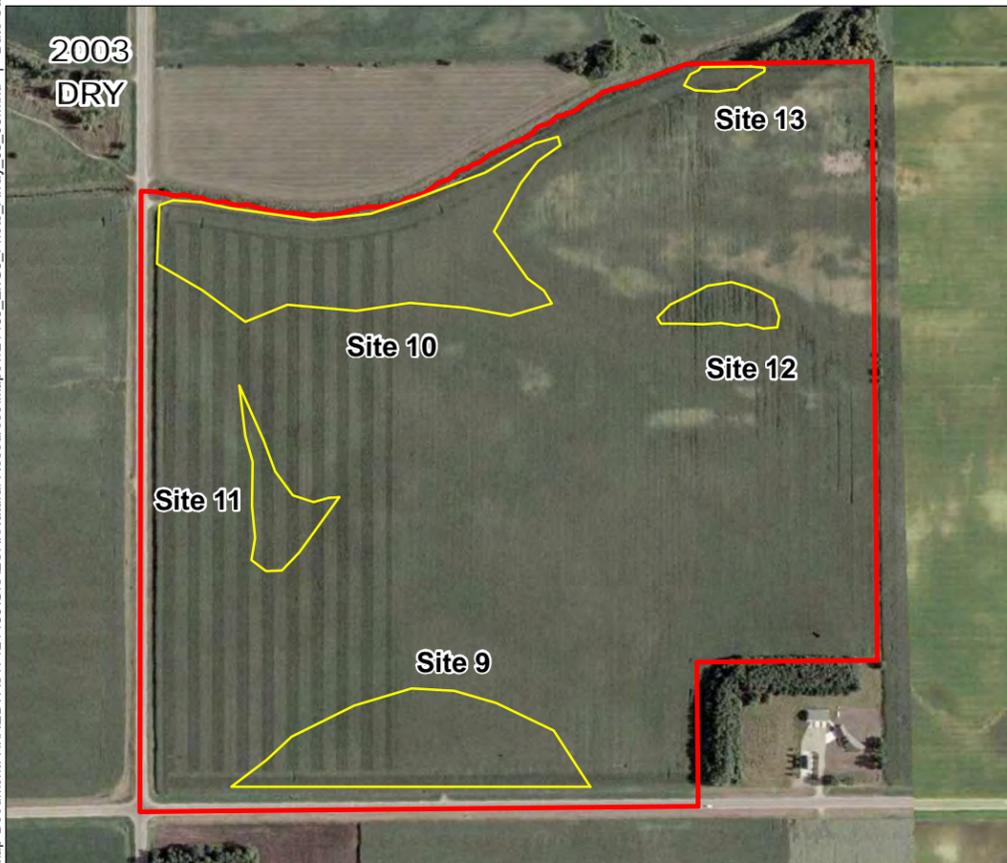
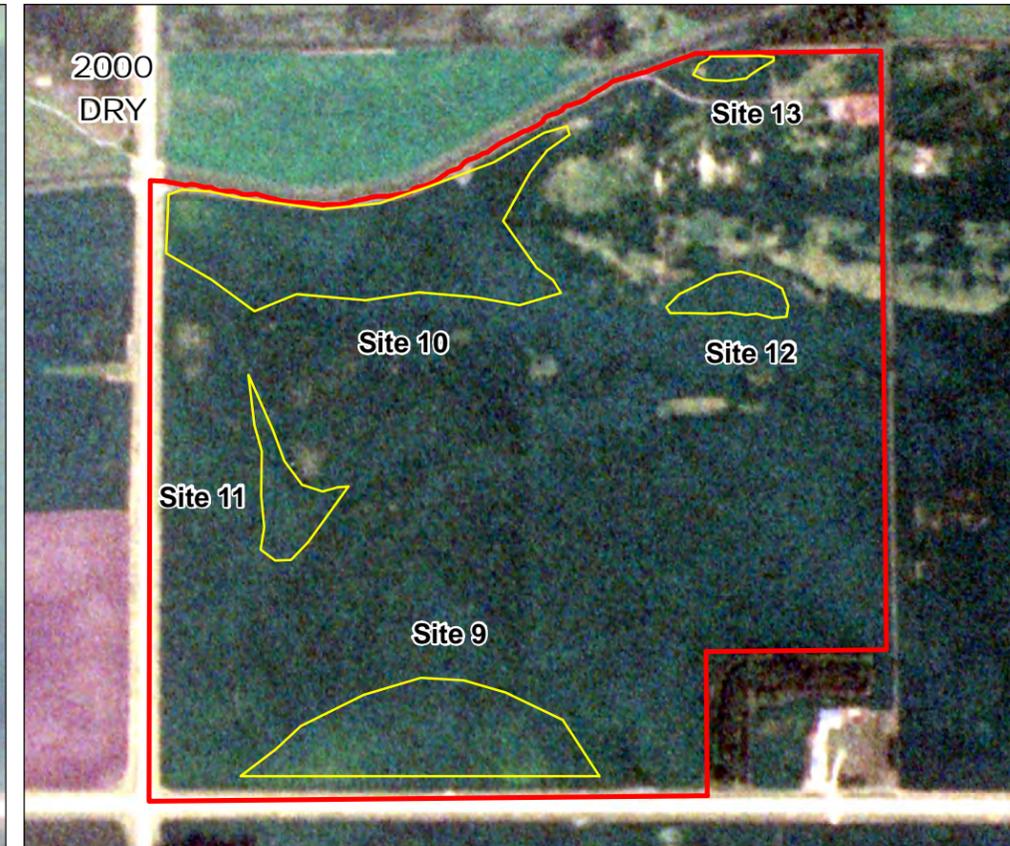
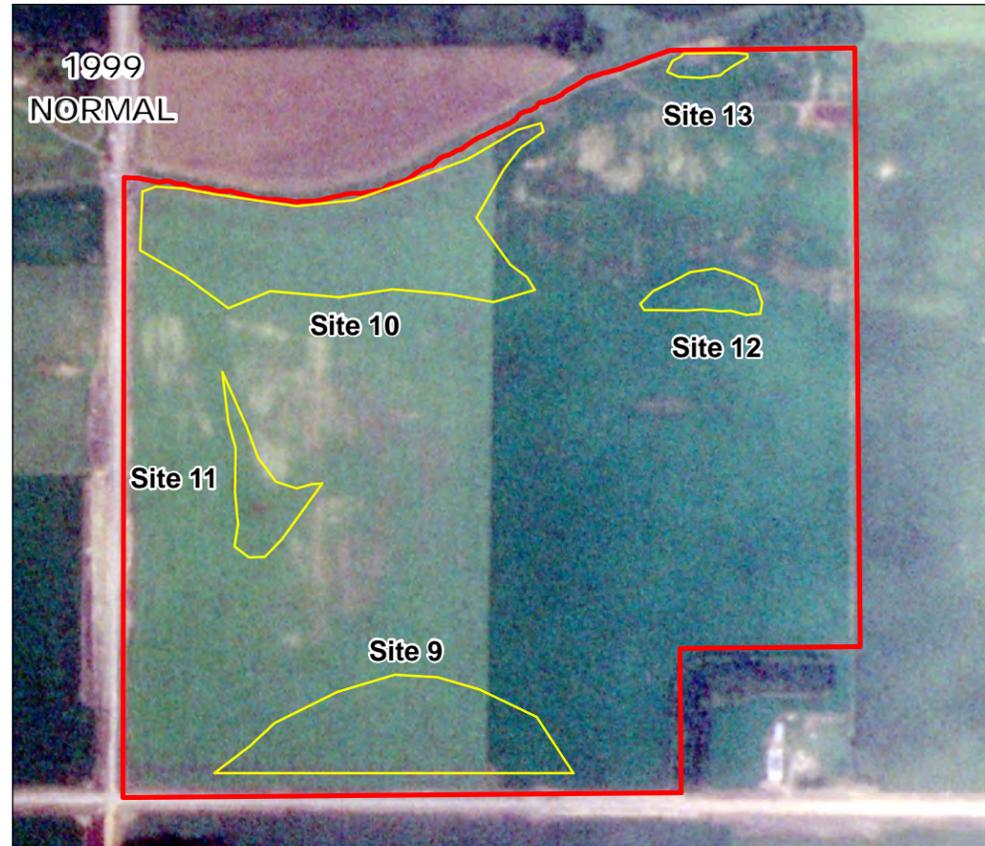
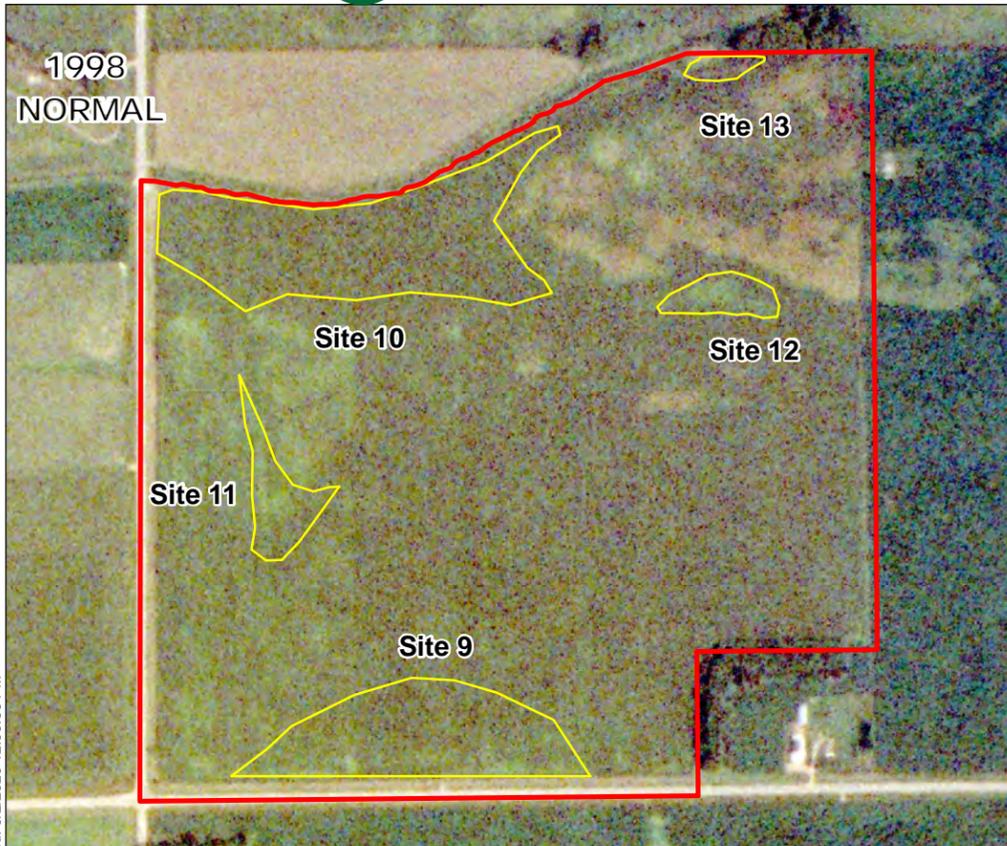




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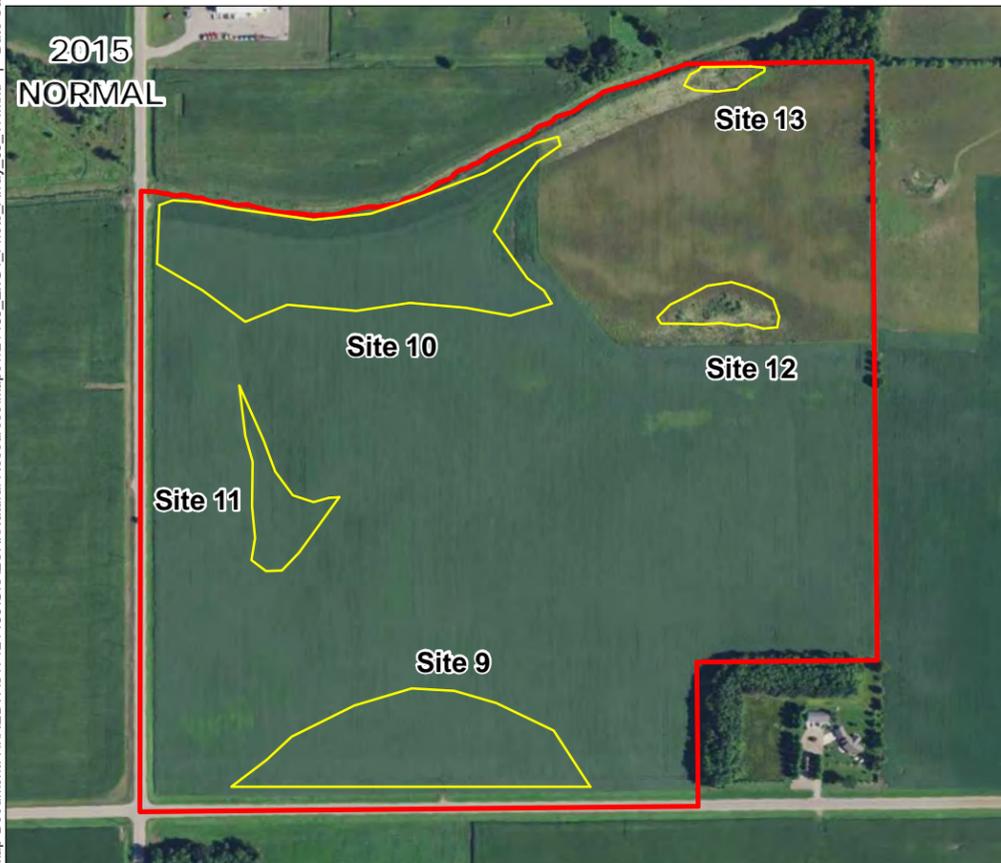
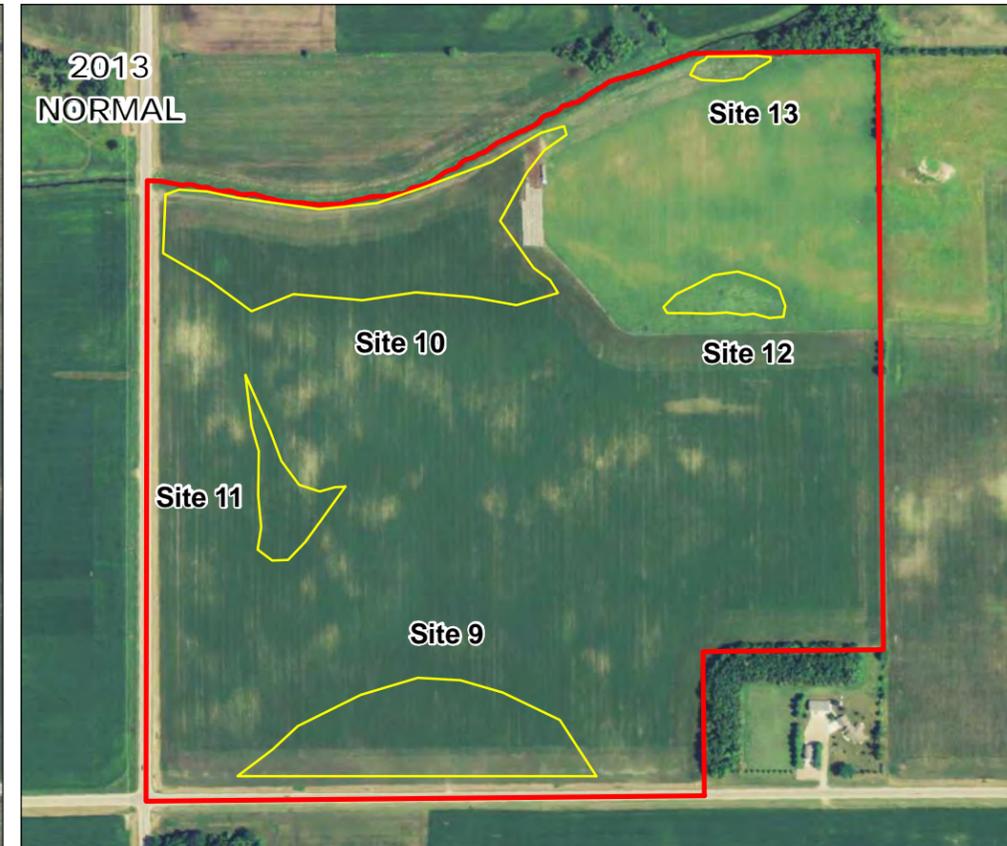
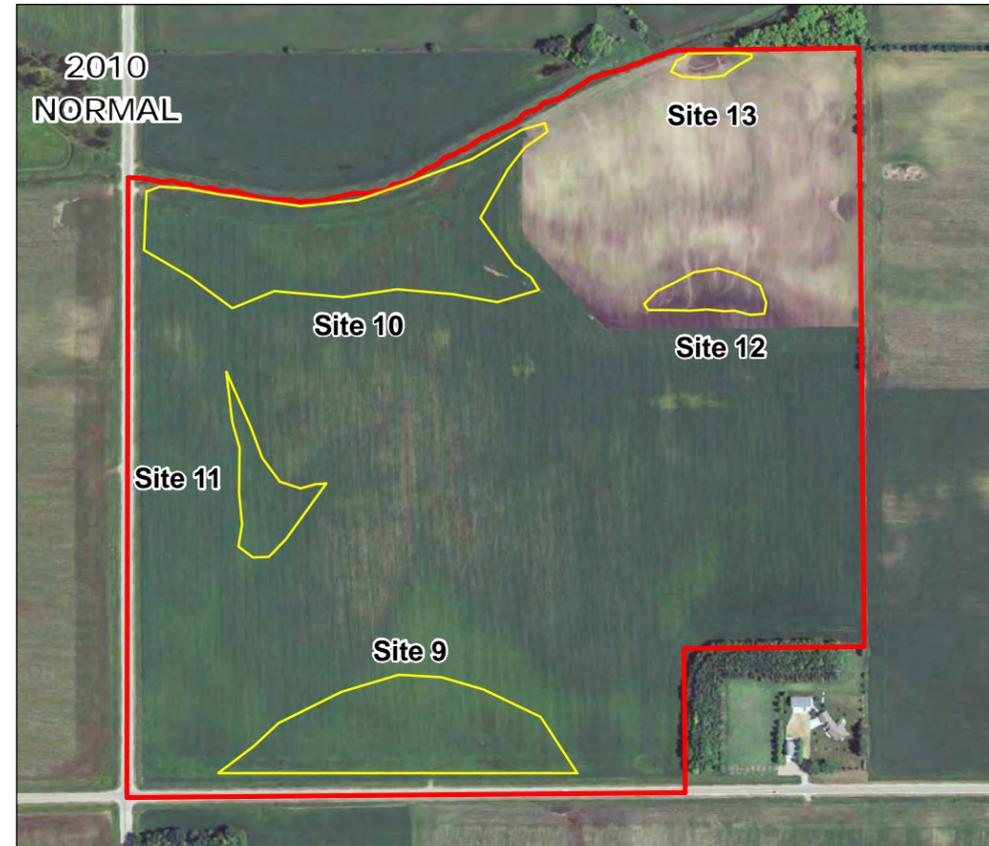
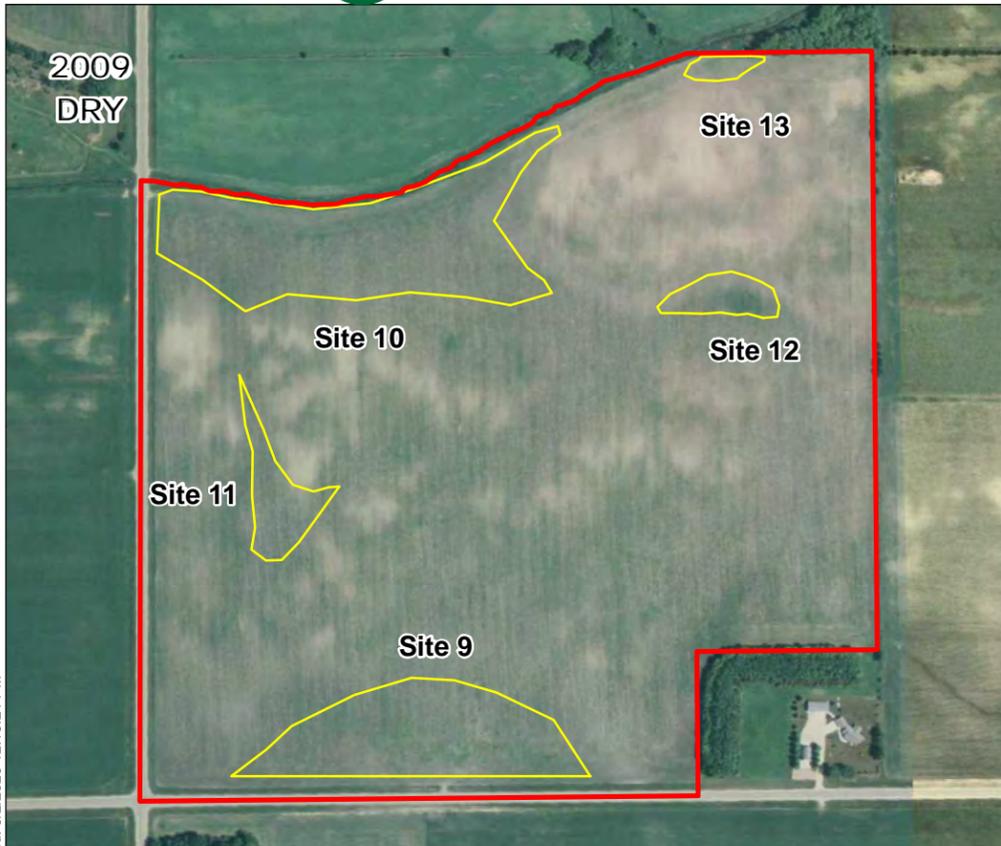
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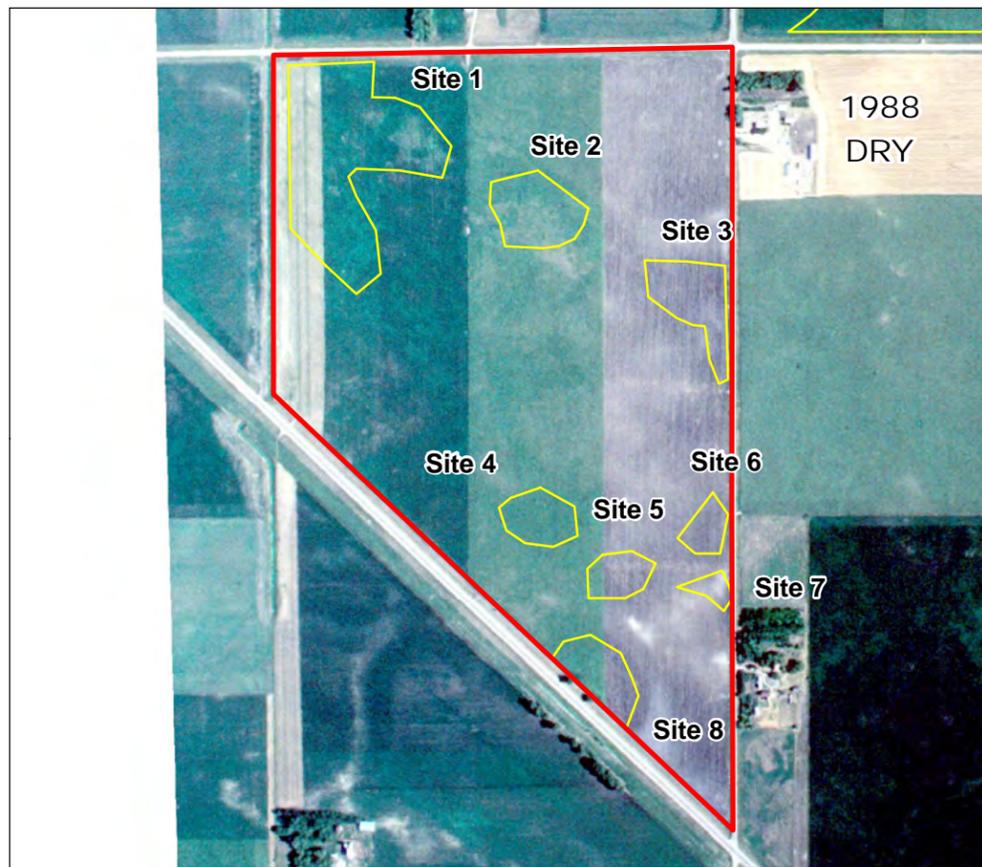
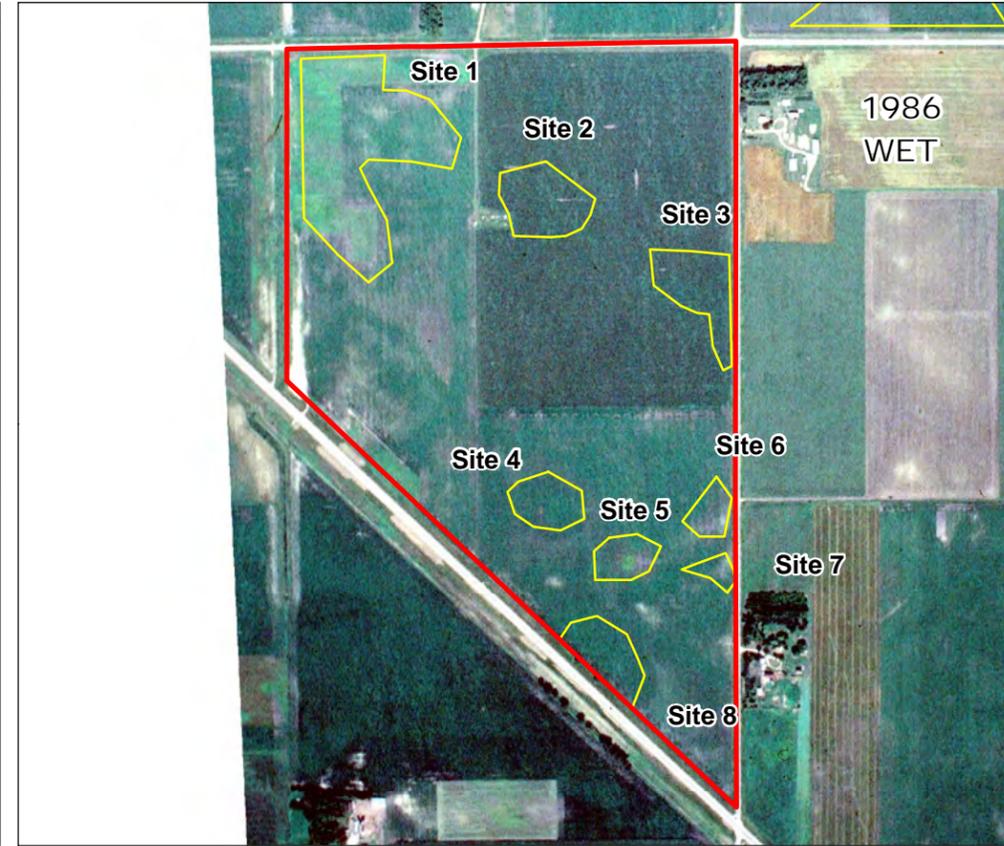
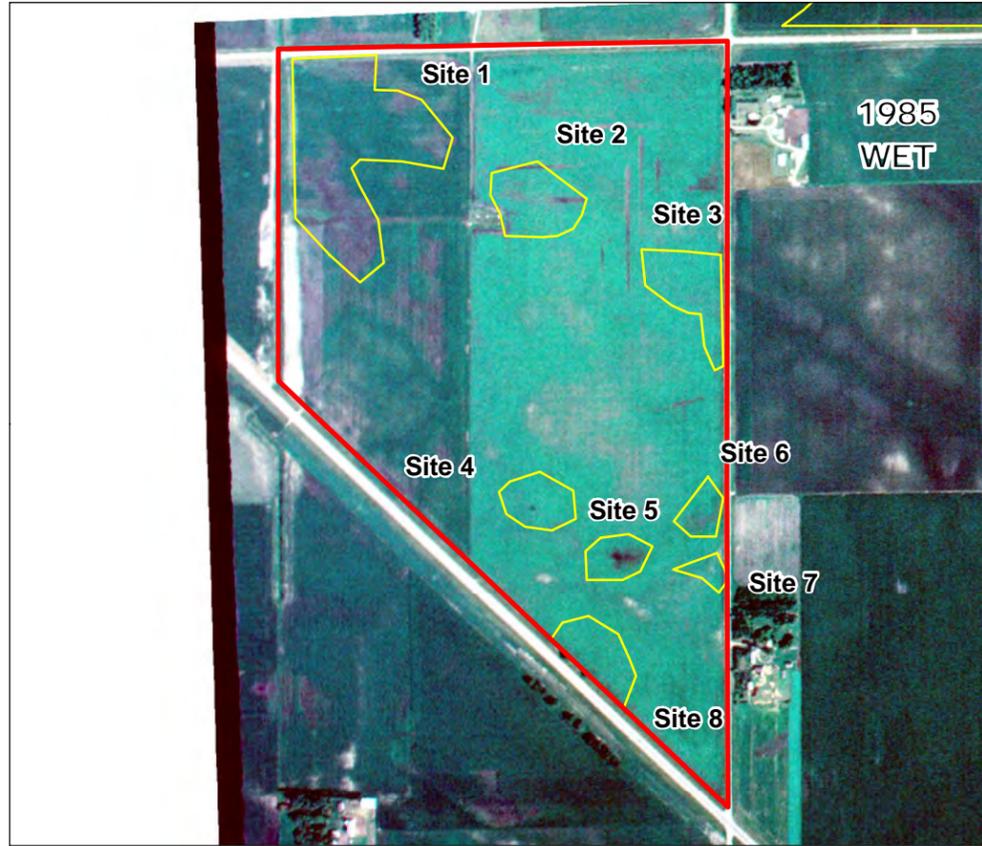
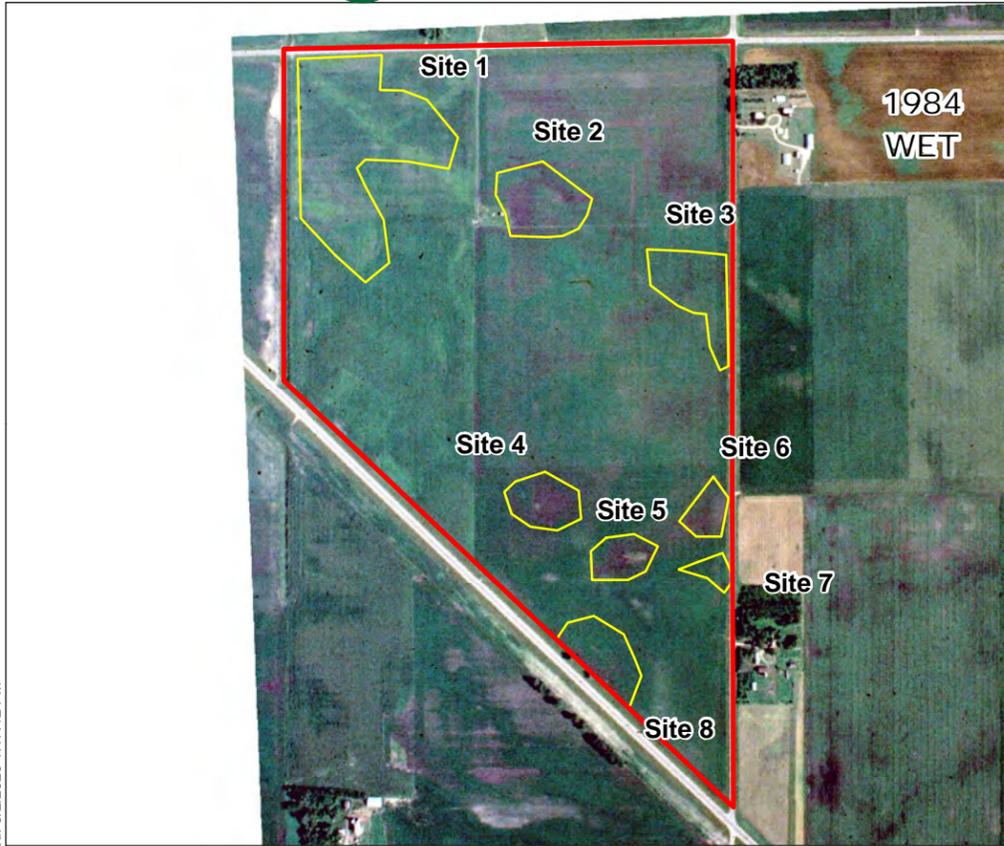
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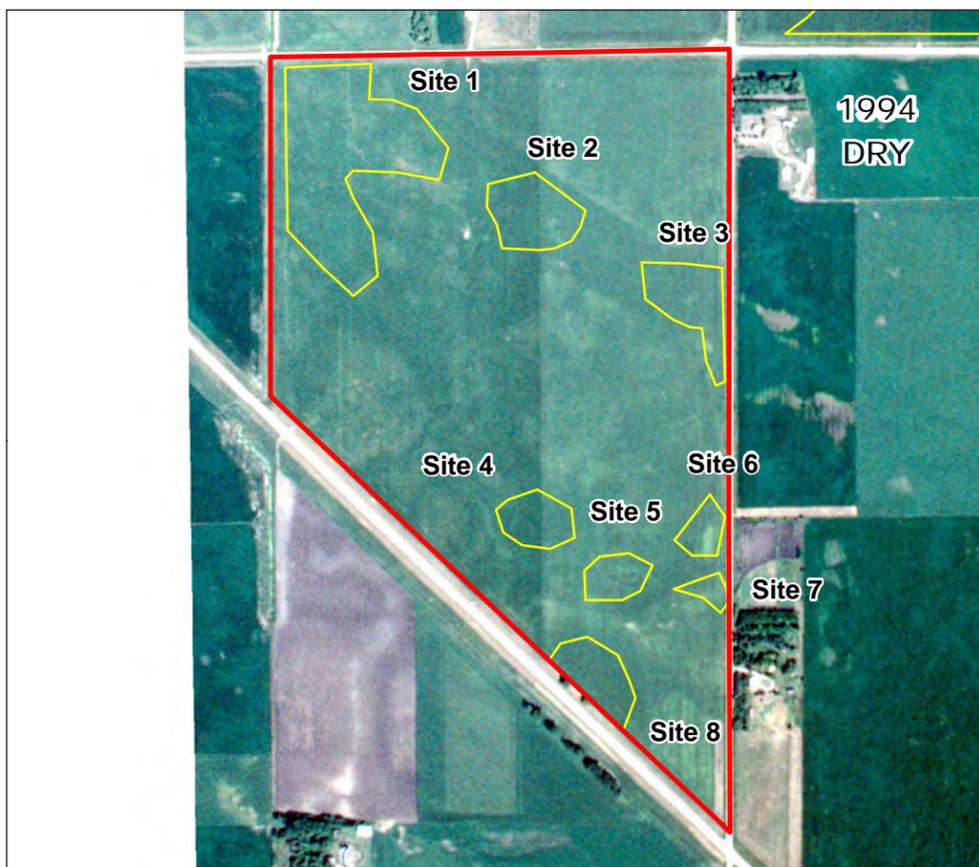
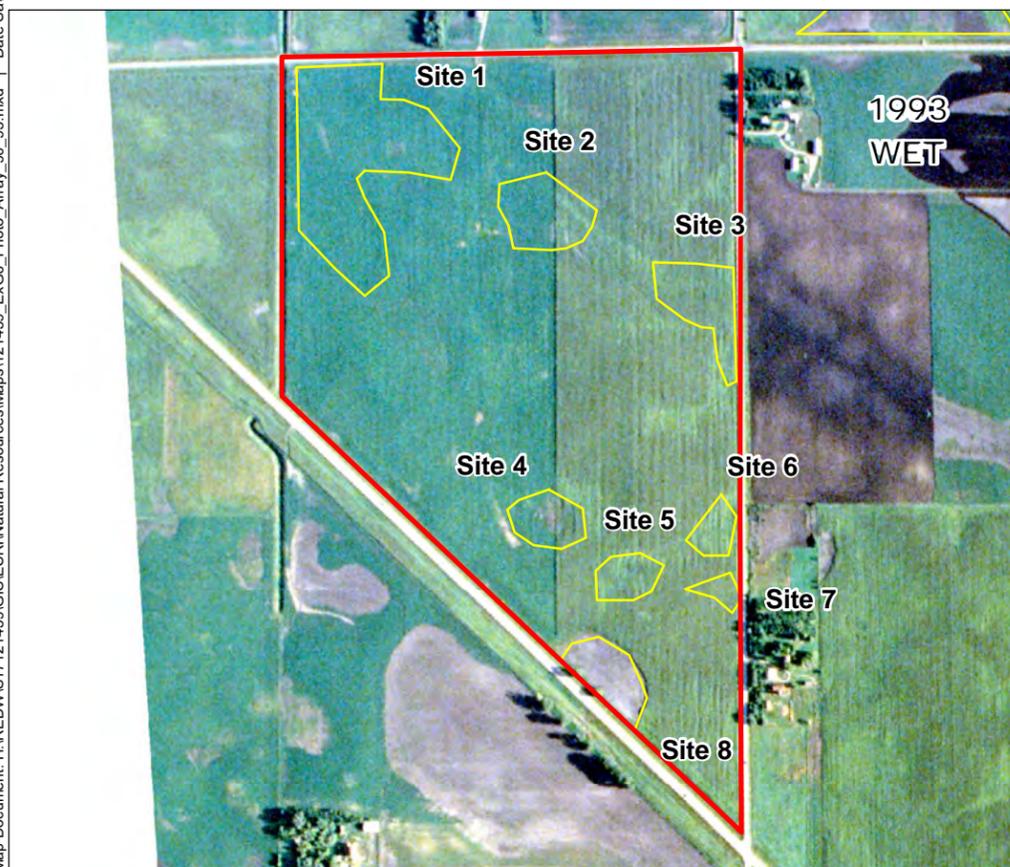
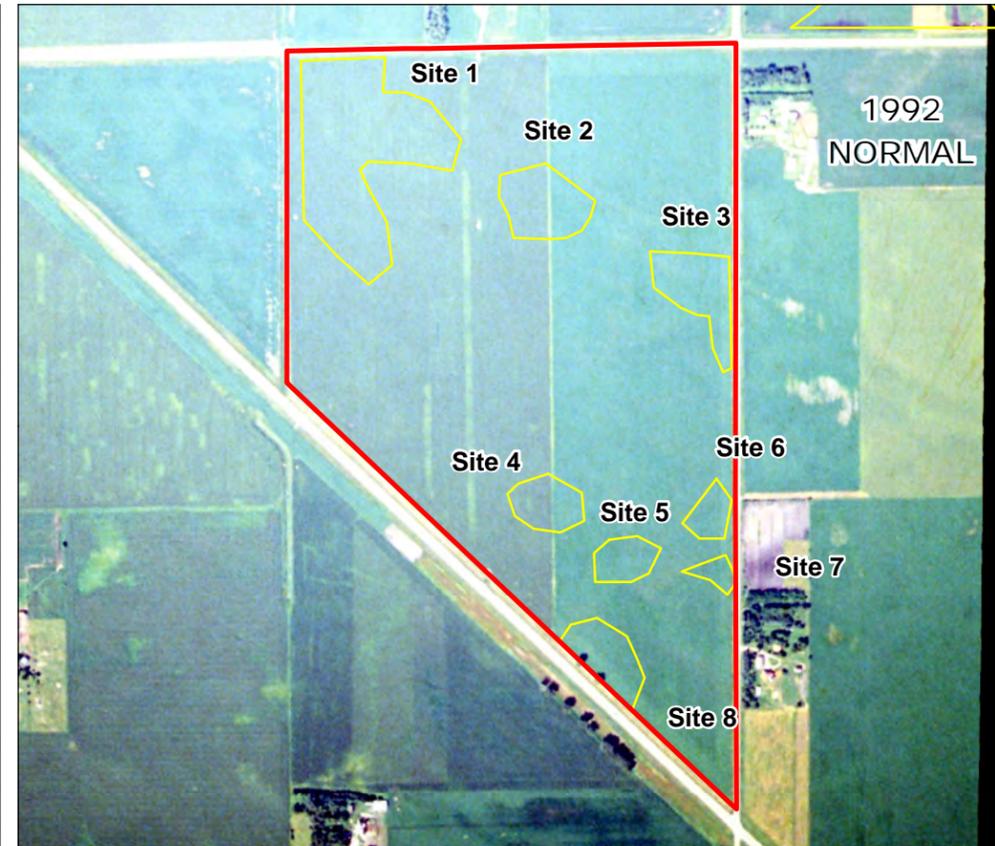
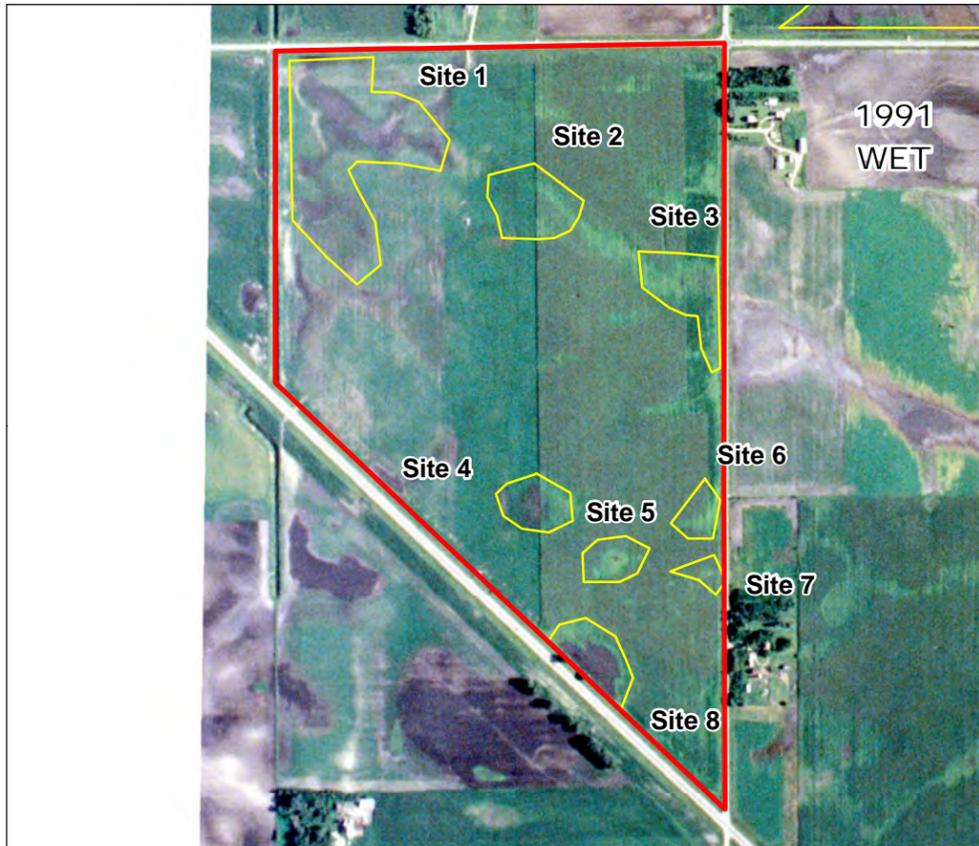
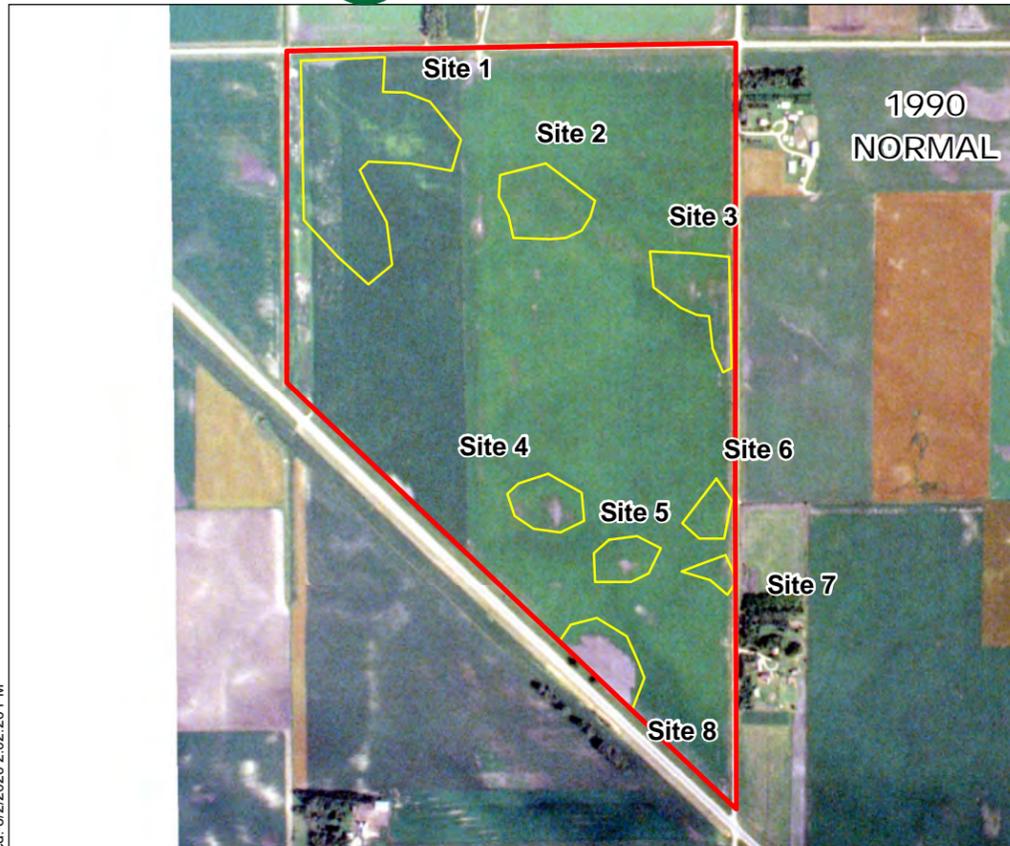


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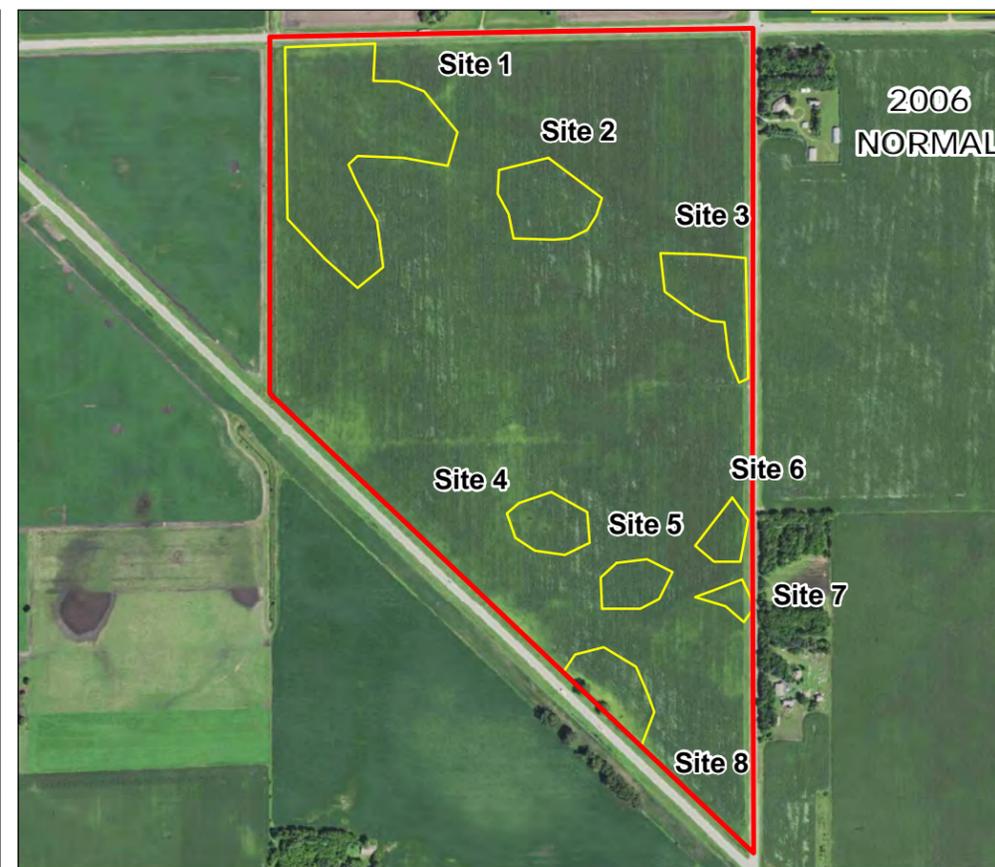
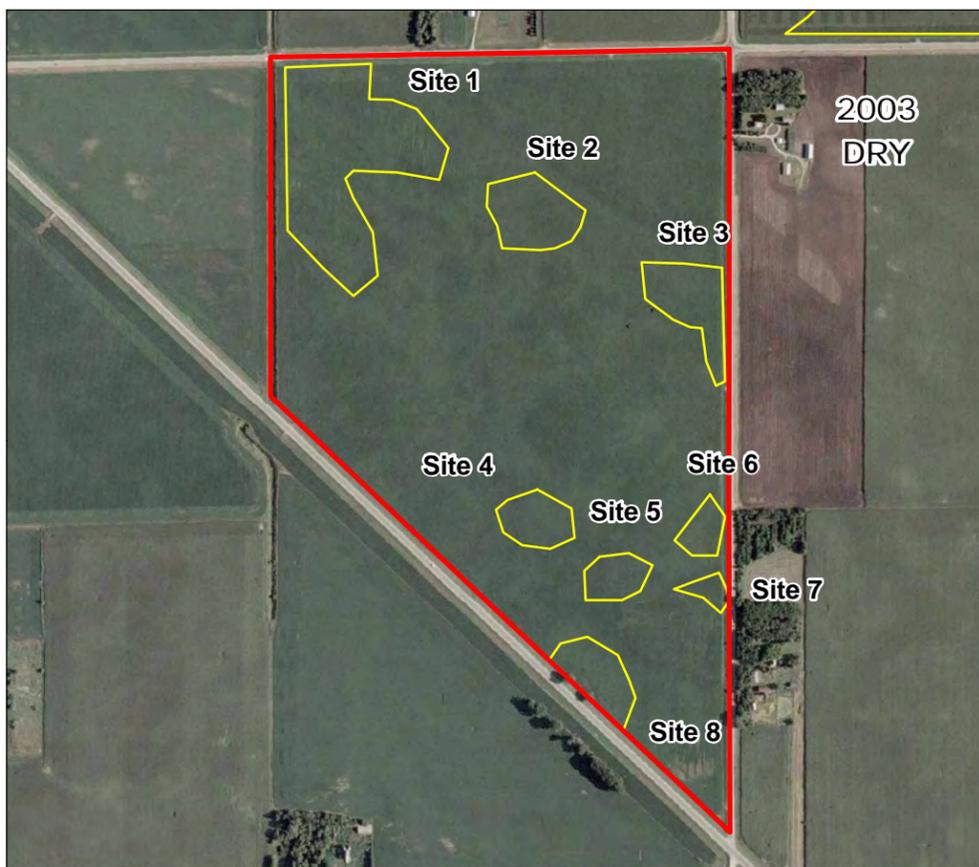
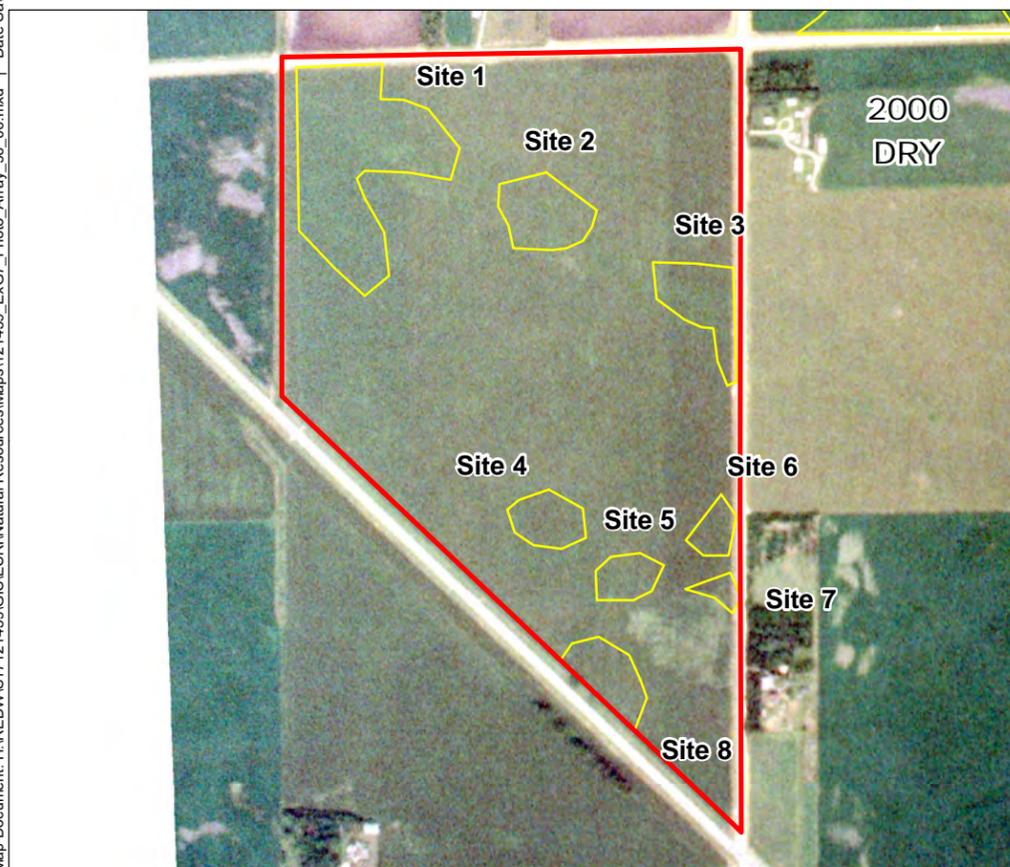
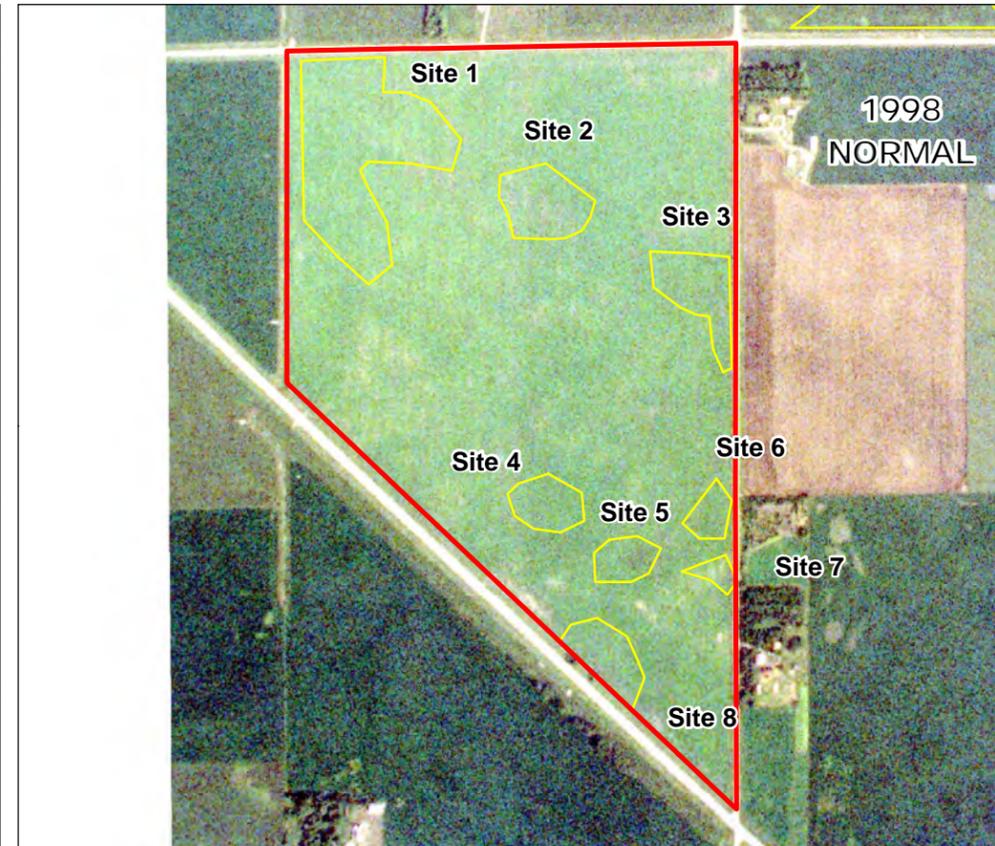
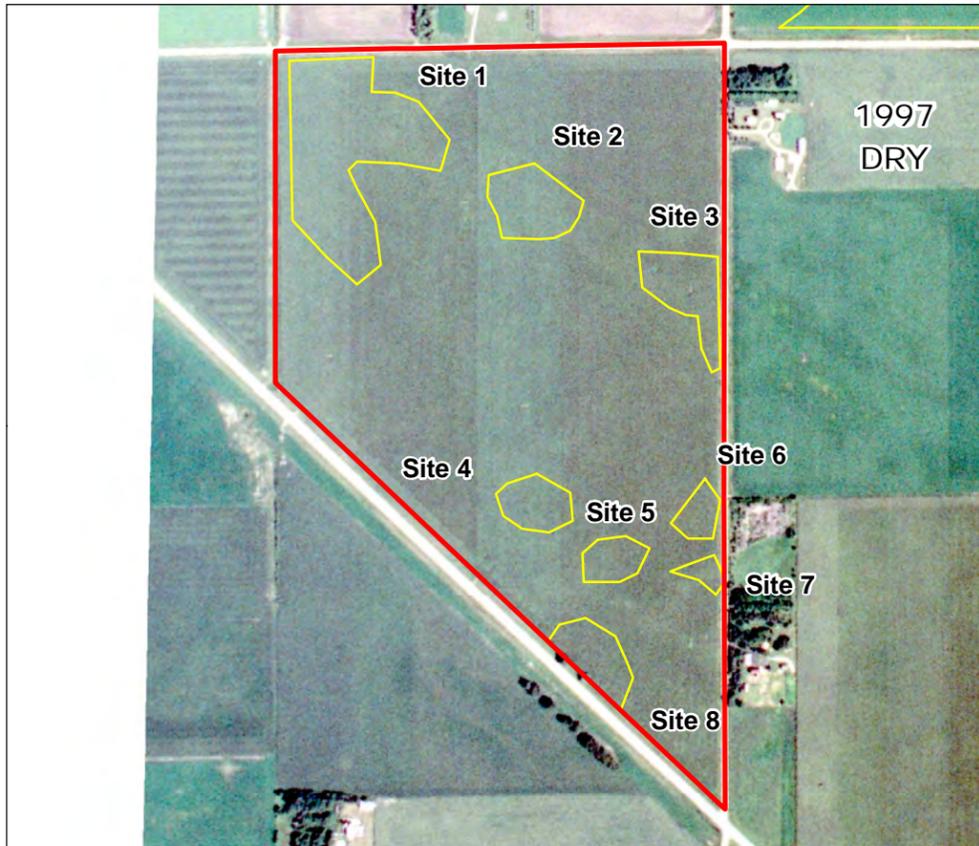
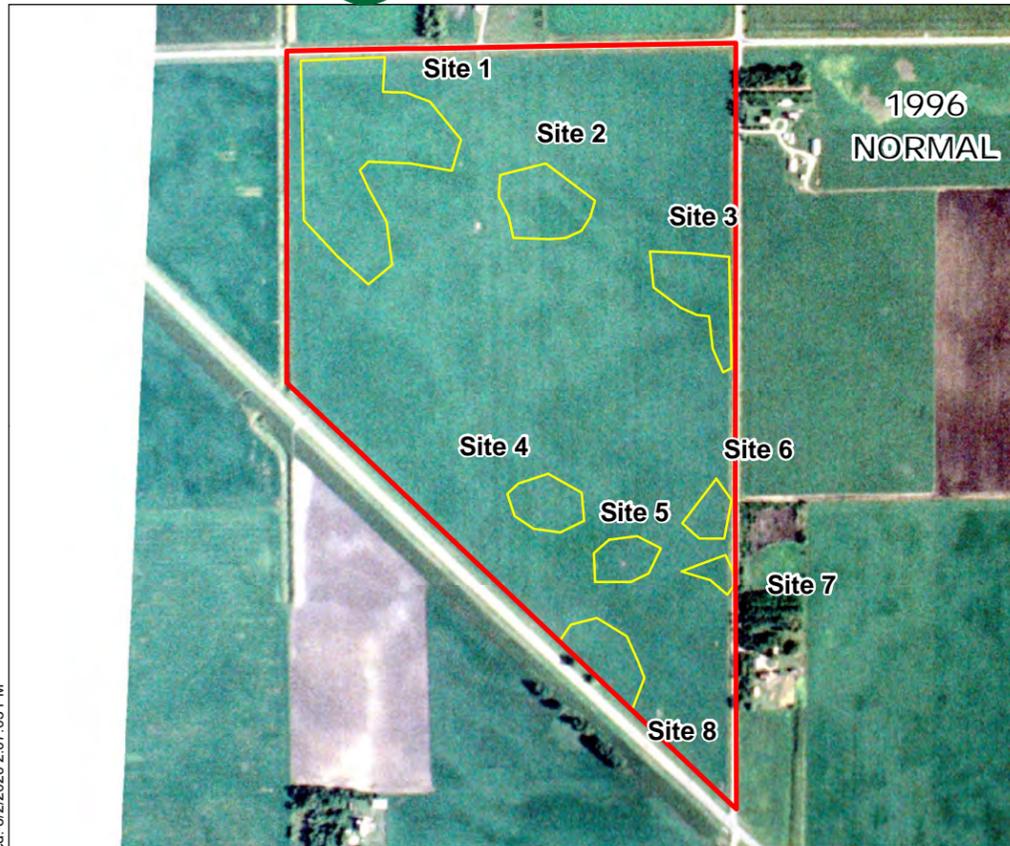


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Source: FSA

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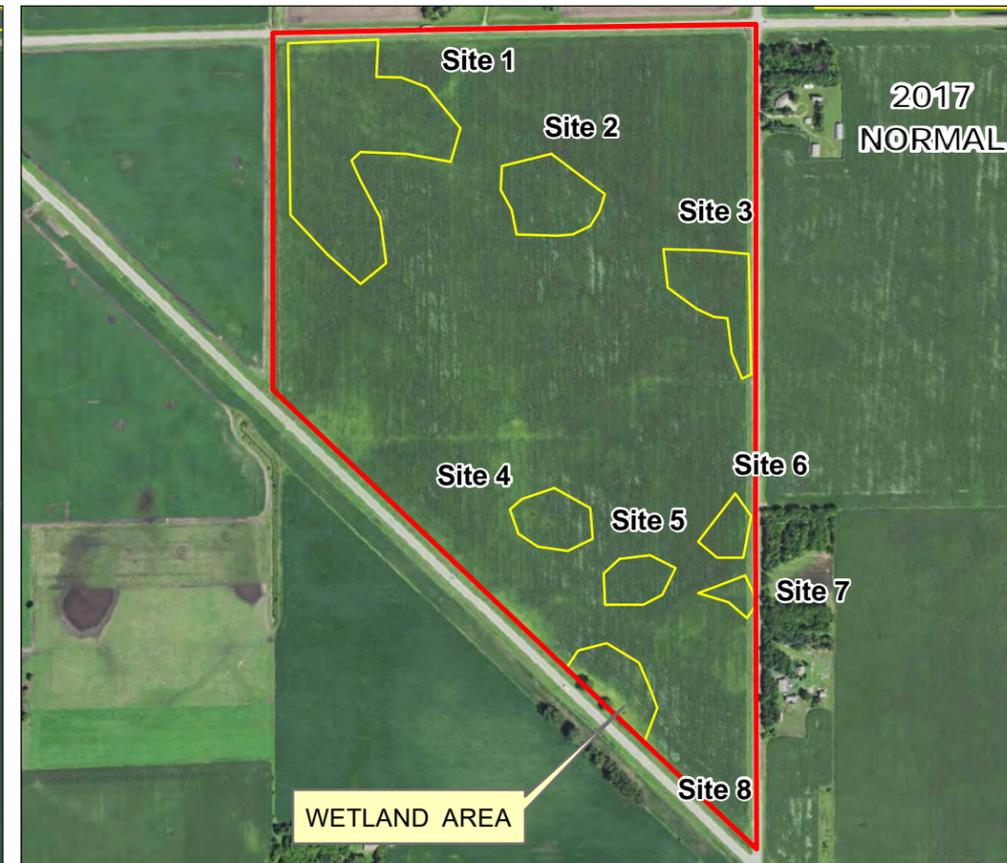
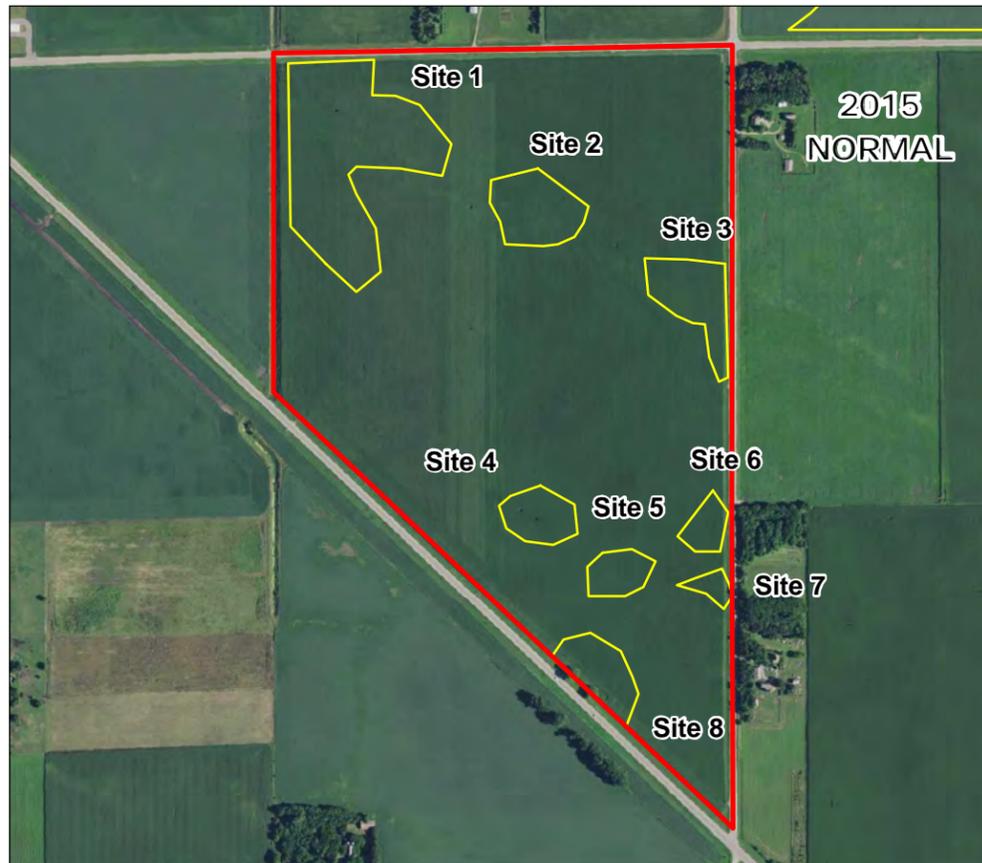
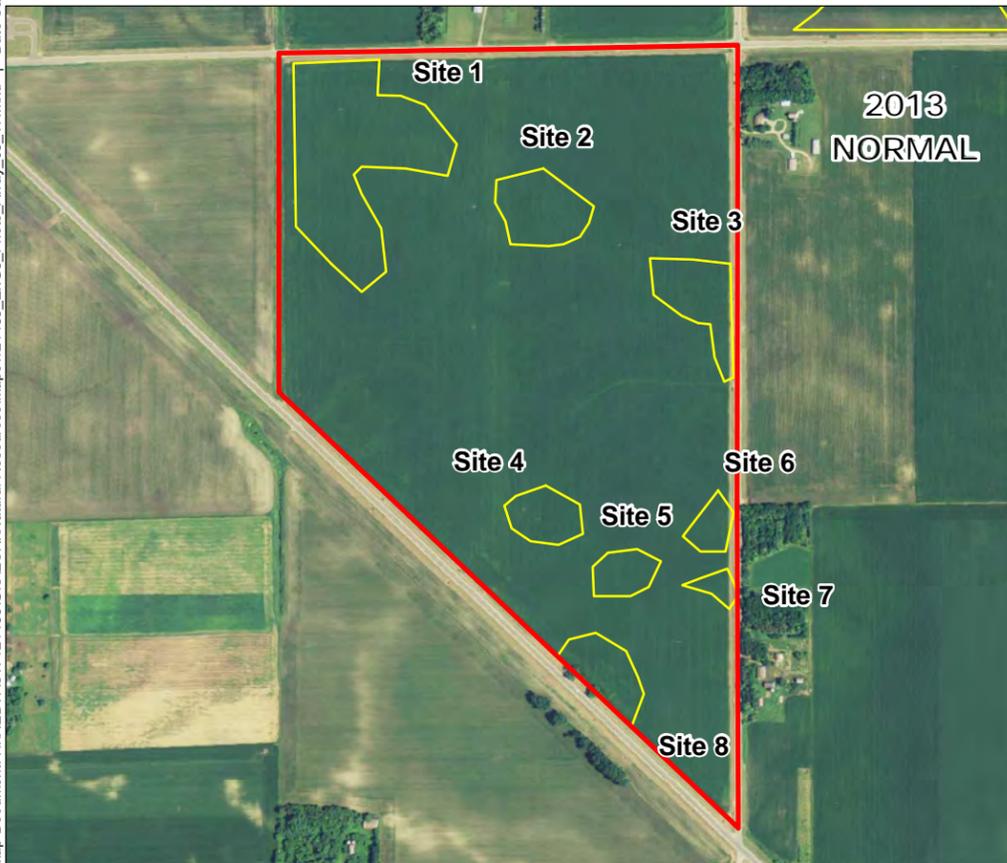
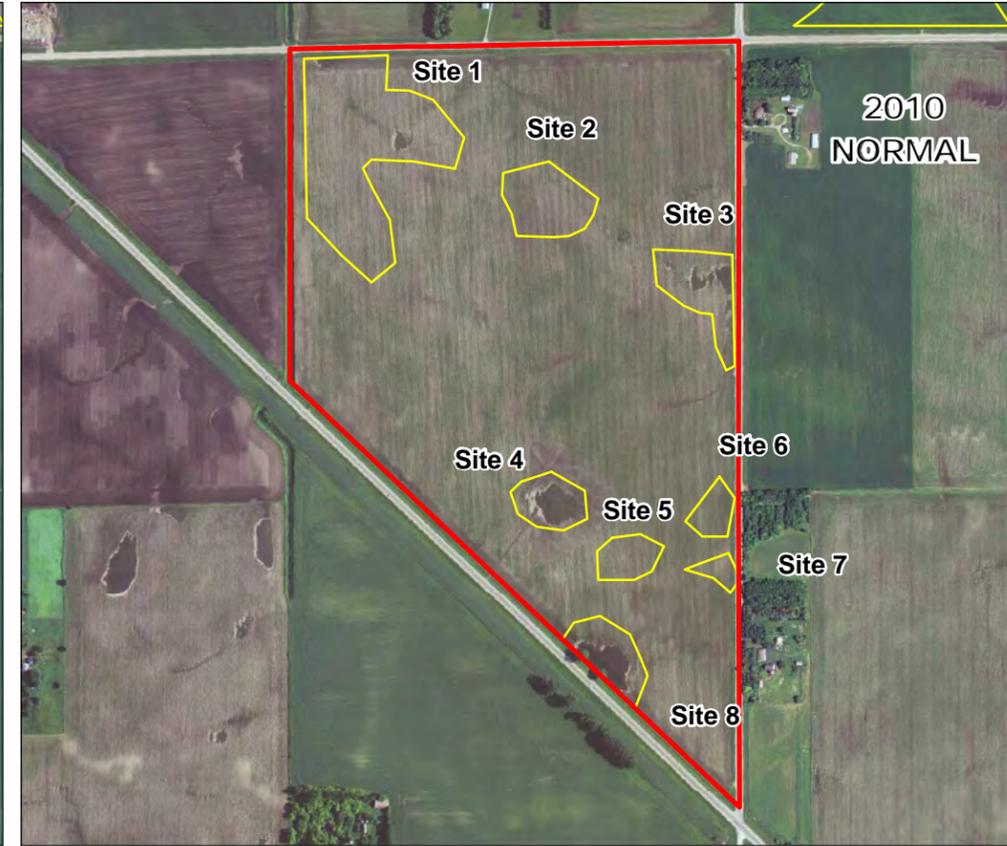
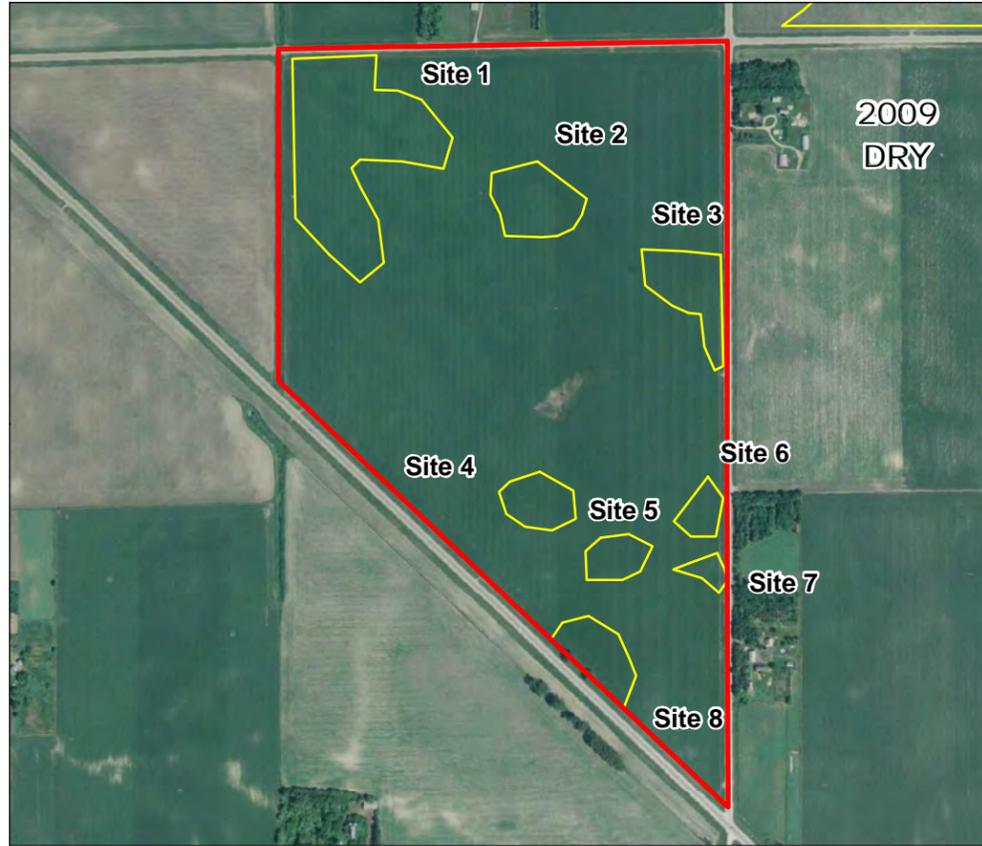
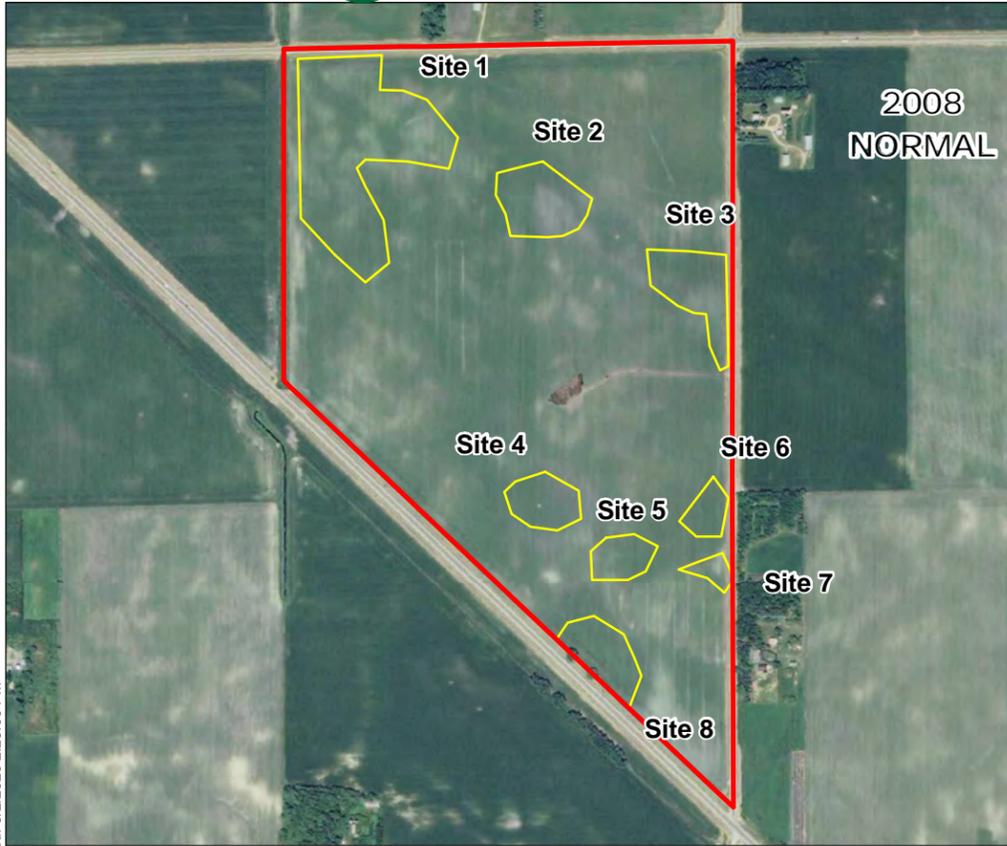




0 1,000 Feet

Source: FSA

June 2020



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& MENK**

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Type & Boundary Application

Redwood Falls SE Development Area

Paxton Twp, Redwood County, MN

September 28, 2020

Submitted by:

Bolton & Menk, Inc.
2638 Shadow Lane, Suite 200
Chaska, MN 55318
P: 952-448-8838
F: 952-448-8805



**BOLTON
& MENK**

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WETLAND DELINEATION REPORT

Redwood Falls SE Development Area

Paxton Twp, Redwood County, MN

September 28, 2020

Submitted by:

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Appendix

- Exhibit A: Site Location Map
- Exhibit B: Site Topography – 2 Foot LiDAR Contours Maps
- Exhibit C: National Wetlands Inventory Map
- Exhibit D: Public Waters Inventory Map
- Exhibit E: Redwood County Soil Survey Maps
- Exhibit F : Delineated Wetlands Maps
- Exhibit G: Delineation Data Sheets
- Exhibit H: Off-Site Hydrology Assessment

I. INTRODUCTION

The City of Redwood Falls is proposing development southeast of the city limits, located northeast and southwest of the intersection of County Road 24 and County Road 1 in Paxton Township, MN. This report details the findings of the field delineation completed on September 16, 2020.

The project is found in Sections 5 & 8, in Township 112 North of Range 35 West.

II. WETLAND DELINEATION METHODOLOGY

The wetland boundaries were delineated and staked in the field in September of 2020, using methods described in the “Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)”. Wetlands identified were classified using “Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979)”, “Wetlands of the United States (United States Fish and Wildlife Service Circular No. 39, 1971 edition)” and “Wetland Plants and Plant Communities of Minnesota and Wisconsin” (Eggers and Reed Third Edition). Subsequently, the three mandatory technical criteria for wetland determinations are as follows:

Hydrophytic Vegetation. A hydrophytic plant community is present when the dominant plant species present can endure prolonged inundation and/or soil saturation during the growing season. A plant’s Wetland Indicator Status is determined using the 2016 National Wetland Plant List for Minnesota, published by the Army Corp of Engineers.

Hydric Soils. A hydric soil is defined as a soil that is formed under conditions of saturation, flooding or ponding long enough during the growing season (the portion of the year when there is above ground growth and development of vascular plants and/or soil temperature at 12 inches below the soil surface is above 41 degrees Fahrenheit or higher) to develop anaerobic conditions in the upper part.

Wetland Hydrology. An area has wetland hydrology if it experiences 14 or more consecutive days of flooding, ponding or a water table within 12 inches of the surface during the growing season at a minimum frequency of five out of ten years. This is determined by using both primary and secondary Wetland Hydrology indicators.

III. BACKGROUND INFORMATION

Prior to conducting a field investigation of this site, Exhibits A through E were used to complete a preliminary evaluation. The data gathered during the preliminary investigation was used as described below:

Exhibit A is a location map of the study area.

Exhibits B is an aerial photo with topographic information overlaid on it. This provides information regarding topography of the site, helping to identify areas that may have wetland characteristics.

Exhibit C is the National Wetlands Inventory of the site and surrounding properties. This information is used to complete a preliminary investigation of the wetlands that may or may not exist on the site.

Exhibit D is used to identify waters that are regulated by the DNR. This exhibit shows where there are DNR public waters relative to the site.

Exhibit E is the Redwood County Soil Survey and is used to identify hydric soils that may lie within the study area.

Delineation Exhibits F and G were prepared from the information gathered at the site.

Exhibit F are the site maps showing the delineated aquatic resources.

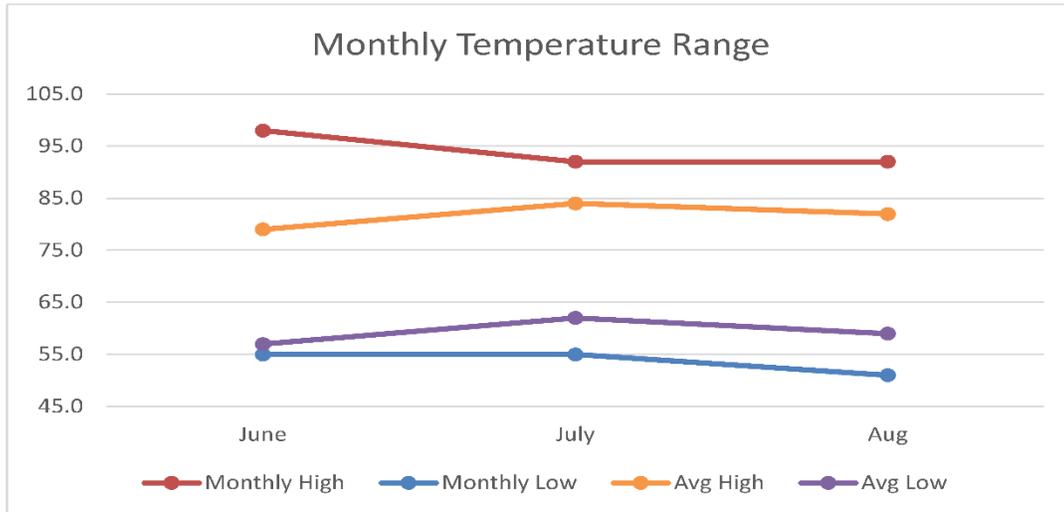
Exhibit G includes the wetland delineation data sheets.

Exhibit H includes the Off-Site Hydrology Assessment data sheets and historical imagery maps.

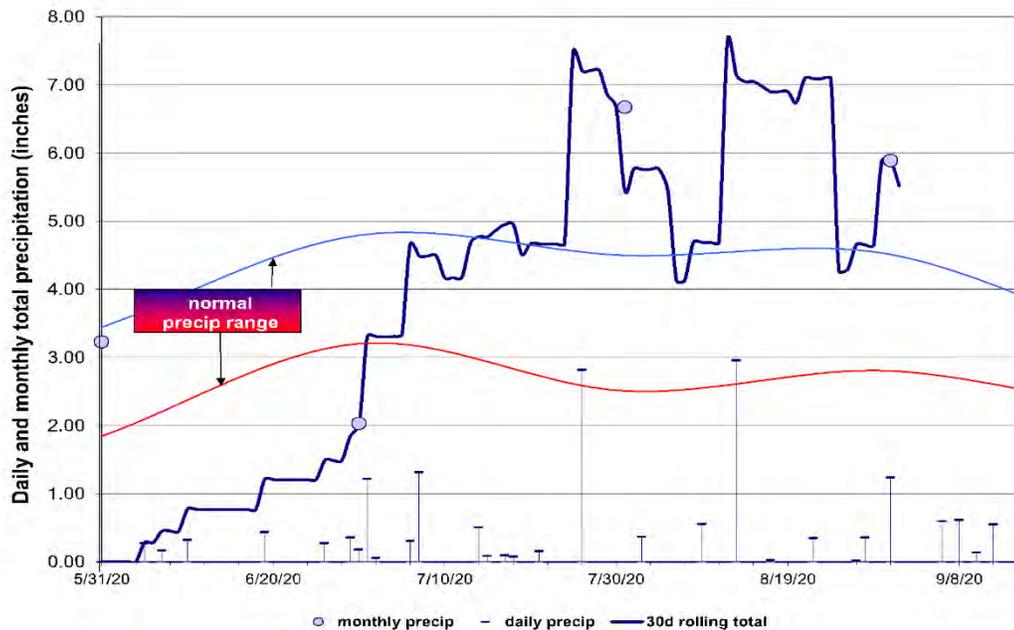
IV. CLIMATE DATA

The monthly temperature table below shows the average high and low temperatures for the three months prior to the field delineation, along with the historical averages for these months. The monthly highs have been above average and the monthly lows have been below average.

MONTHLY TEMPERATURE RANGE



Antecedent precipitation was evaluated using a combination of the NRCS Method and the Rolling Totals Method. The analysis found that precipitation was well above average for the 60 days leading up to this investigation.



ANTECEDENT PRECIPITATION CONDITIONS

This climatic data was gathered using the Climatology Working Group Website, <http://climate.umn.edu/> and the National Weather Service Forecast Office, <http://w2.weather.gov/climate/>. The information for the investigation was retrieved from the WETS Station: Redwood Falls, MN

V. FINDINGS

In June, 2020, a level delineation was performed to identify any potential wetlands within the study area. Three potential areas were identified, area 8, 12 and 13. These 3 areas had wet signatures over 1/3 of the time. Two other areas, area 1 and 3 had wet signatures 27% of the time. On September 16, 2020, a field investigation was performed to evaluate and verify the existence and boundary of any aquatic resources located within the study area. All five areas having wet signatures over 25% of the time were reviewed in the field. Two wetlands were found to exist within the study corridor. The following describes the aquatic resources identified, together with a brief description of wetland types and observations made during the field investigation. The same numbers are used to identify the wetlands as were used in the level 1 study.

Wetland 8 (W8):

NWI Cowardin: None

PWI (Hydro) ID: None

Field Observation Circular 39:

Type 2

Field Observation Eggers and Reed: Fresh (wet) Meadow

Soil Mapping Unit(s): Okoboji silty clay loam

Wetland 8 lies within the lowest part of a depression in a drained cropland field. The level 1 delineation had indications of wet signatures 36% of the time in this depression. Other than this small depression, there appeared to be no crop stress even with higher than average precipitation the last two months. The sample transect was taken near the corn/soybean boundary.



View of Wetland 8, facing northeast, from TH 67

The field investigation found that the site has met all three wetland indicators and this wetland should be considered a of a palustrine emergent nonpersistent saturated (PEM2B) wetland. Based upon the level 1 study, the field is adequately drained in most years (64%). Several sample points were taken to determine the wetland boundary.

At the W8 wetland pit location, the plant community was dominated by soybeans. If left uncultivated this small area would likely have hydrophytic vegetation.

Soils in the W8 wetland pit met the hydric soil indicators A12-Thick Dark Surface. Soils in the W8 upland pit did not meet any hydric indicator.

The W8 wetland location met the secondary hydrology indicators C9 (Saturation visible on aerial imagery) D1 (stunted or stressed plants) and D2-Geomorphic Position. The W8 upland pit location met secondary hydrology indicator C9 (Saturation visible on aerial imagery).

Wetland 12 (W12):

NWI Cowardin: PEMA

PWI (Hydro) ID: None

Field Observation Circular 39: Type 2 & 6

Field Observation Eggers and Reed:

Shrub Carr ringed by Fresh (wet) meadow.

Soil Mapping Unit(s): Estherville loam

Wetland 12 is located approximately 1,800 feet east of CR 1 and 800 feet south of County Ditch 52 in what appears to be some type of set aside or prairie restoration area. Based upon soil survey and contour maps it appears that this basin may have been constructed.



View of Wetland 12, facing south.

The field investigation found that the site has met all three wetland indicators and this wetland should be considered a palustrine emergent scrub shrub seasonally flooded/saturated (PSS6E) wetland. Several sample points were taken to determine the wetland boundary.

At the W12 wet pit location, the plant community was dominated by willows in the overstory and reed canarygrass in the understory. The understory also had high percentages of Softstem and Green Bulrush and Giant Goldenrod. The W12 upland pit location was dominated by Yellow Indian grass, Canada goldenrod and Common Milkweed. Only the wetland pit location met hydrophytic vegetation.

Soils in the W12 wetland pit met the hydric soil indicators A12-Thick Dark Surface. Soils in the W12 upland pit did not meet any hydric soil indicators.

The W12 wetland location met the secondary hydrology indicators B10 – Drainage patterns, C9-Saturation visible on aerial imagery, D2-Geomorphic Position and D5- FAC-Neutral Test. The W12 upland pit location did not meet any wetland hydrology indicators.

Area 13:

NWI Cowardin: None

PWI (Hydro) ID: None

Field Observation Circular 39: None

Field Observation Eggers and Reed: None

Soil Mapping Unit(s): Estherville loam

Area 13 was investigated because the aerial review found what appeared to be wet signatures 64% of the years studied. The field investigation showed that while this site met hydric vegetation, it did not meet either hydric soil or hydrology (Pit 4 data sheet).

Area 1:

NWI Cowardin: None

PWI (Hydro) ID: None

Field Observation Circular 39: None

Field Observation Eggers and Reed: None

Soil Mapping Unit(s): Lemond loam

Area 1 was investigated because the aerial review found what appeared to be wet signatures 27% of the years studied. The field investigation found this area to be in corn. The corn showed no signs of stress. Area 1 did not meet either hydric soil or hydrology indicators.

Area 3:

NWI Cowardin: None

PWI (Hydro) ID: None

Field Observation Circular 39: None

Field Observation Eggers and Reed: None

Soil Mapping Unit(s): Lemond loam

In area 3 two pit sites were sampled, pit 2 in the wider portion of area 3 and pit 3 in the lowest portion of area 3. Area 3 was investigated because the aerial review found what appeared to be wet signatures 27% of the years studied. The field investigation found this area to be in soybeans. The soybeans showed no signs of stress. Neither pit 2 or 3 met hydric soils or hydrology indicators.

VI. CONCLUSION

The delineation was performed on Sept. 16, 2020. The boundaries of the wetlands were staked in the field with three foot "Wetland Delineation" pin flags. The location of the pin flags were surveyed by Bolton & Menk, Inc. using a Trimble Geo-XH GPS Data Collector and tied to the Redwood County coordinate system. Due to these being farm fields, the flags were removed after the boundary was surveyed. The delineated limits are believed to be the upper limits of where all three of the required wetland criteria were present.

Bolton & Menk, Inc., was asked to determine the boundaries of those jurisdictional wetlands that exist upon this property as defined by the Wetland Conservation Act.

Based upon all available information, the existing conditions that currently prevail, and the on-site investigation, evidence supports the presence of two wetlands within the boundaries of the study area.

WETLAND SUMMARY

Id #	Wetland Type^	Size*
W8	Type 2	0.09 ac
W12	Type 6	1.09 ac

**size measured within study area.*

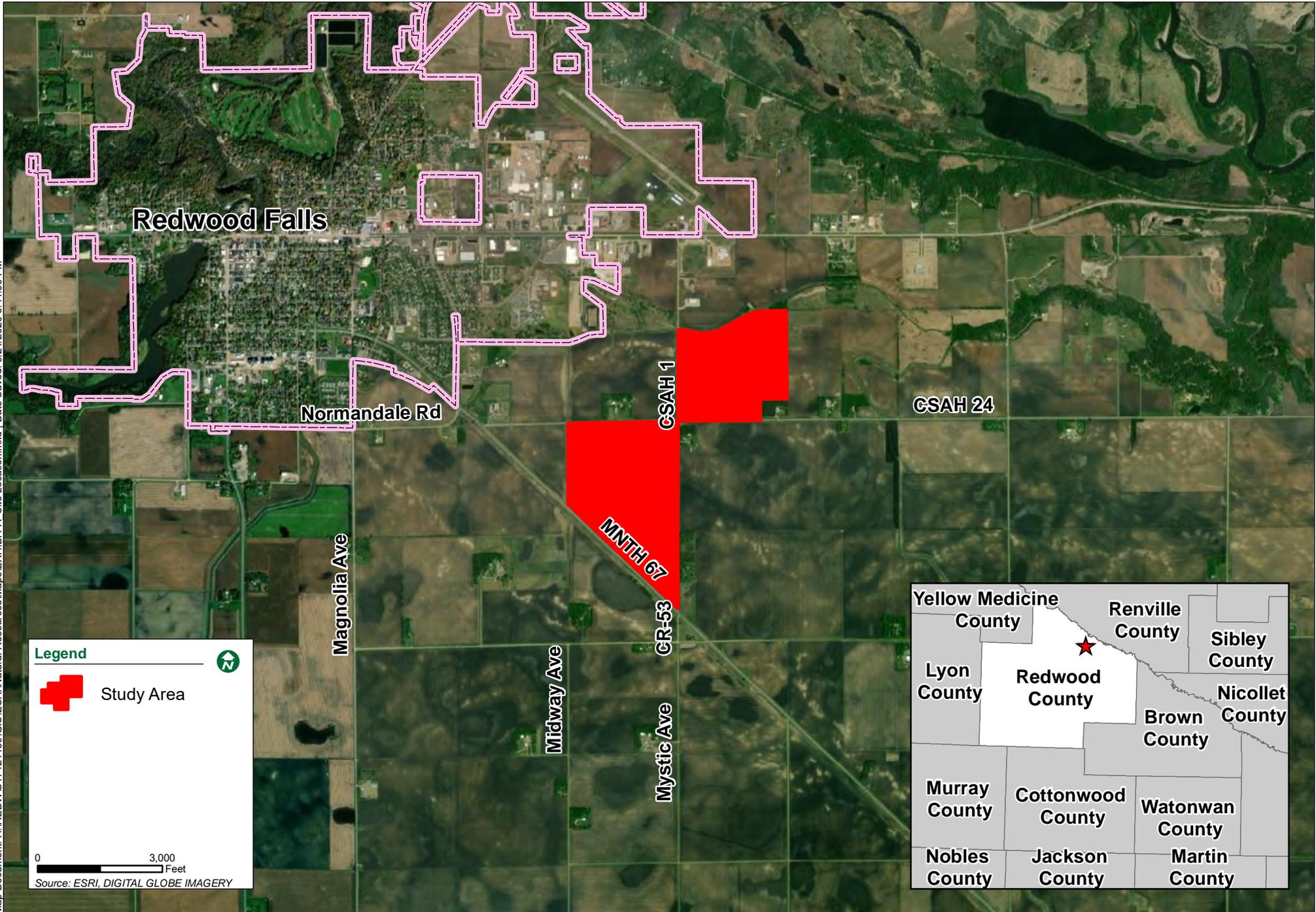
^wetland type within study area

Sincerely,
BOLTON & MENK, INC.



Mark L. Perry
Certified Wetland Delineator, No. 1129

APPENDIX



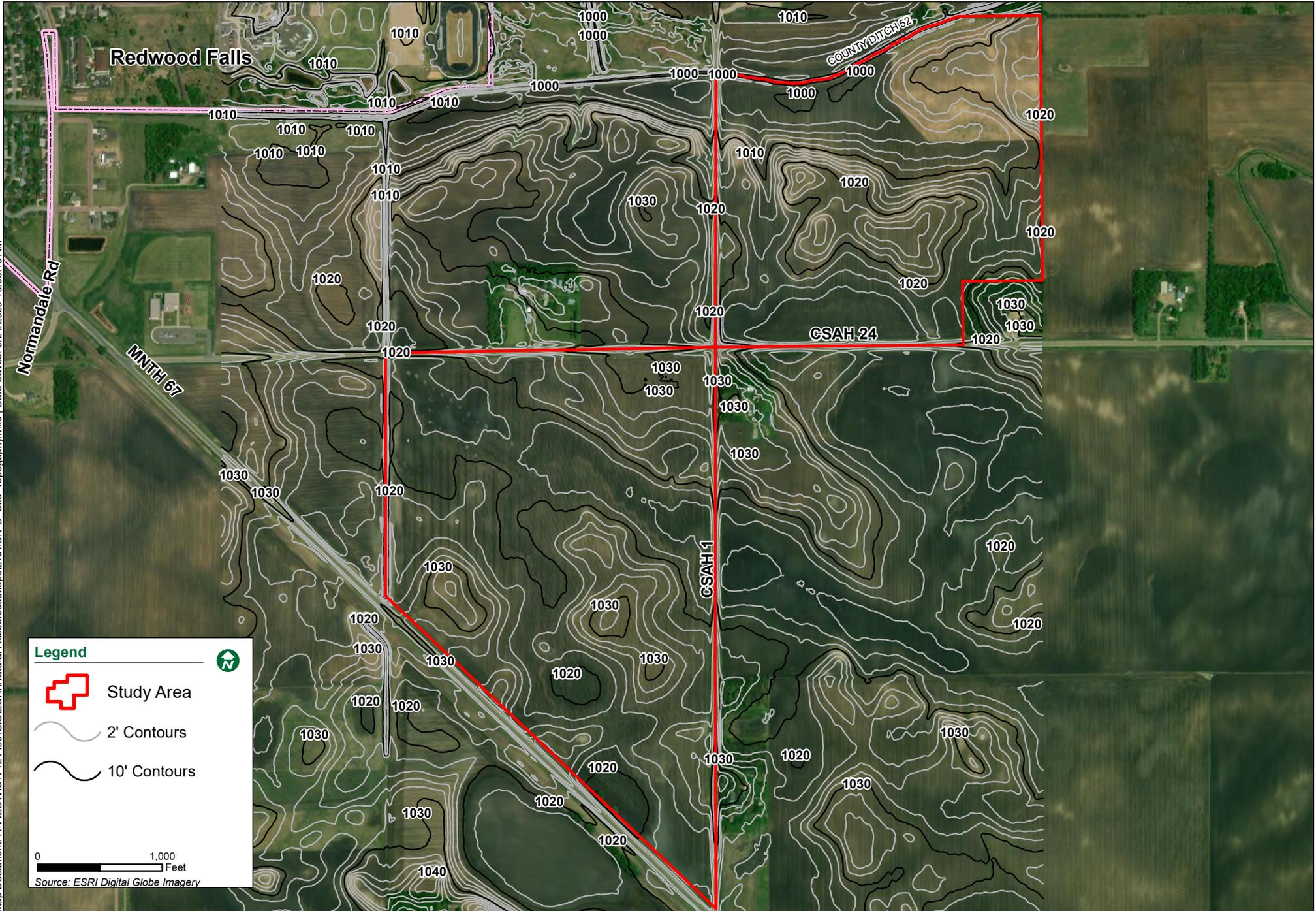
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Study Area

0 3,000 Feet

Source: ESRI, DIGITAL GLOBE IMAGERY

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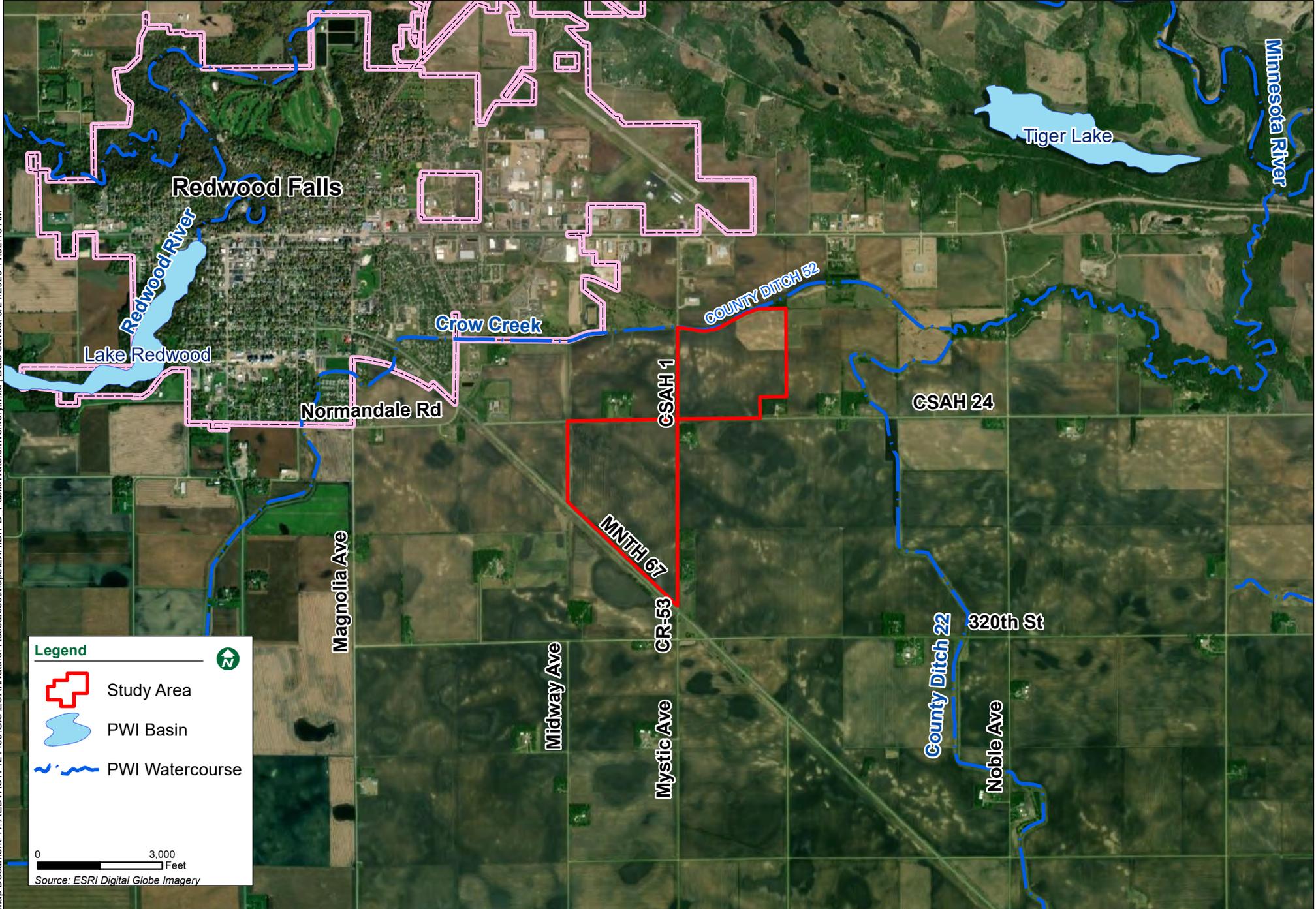


Legend

-  Study Area
-  NWI Wetland

0 1,000 Feet

Source: ESRI Digital Globe Imagery

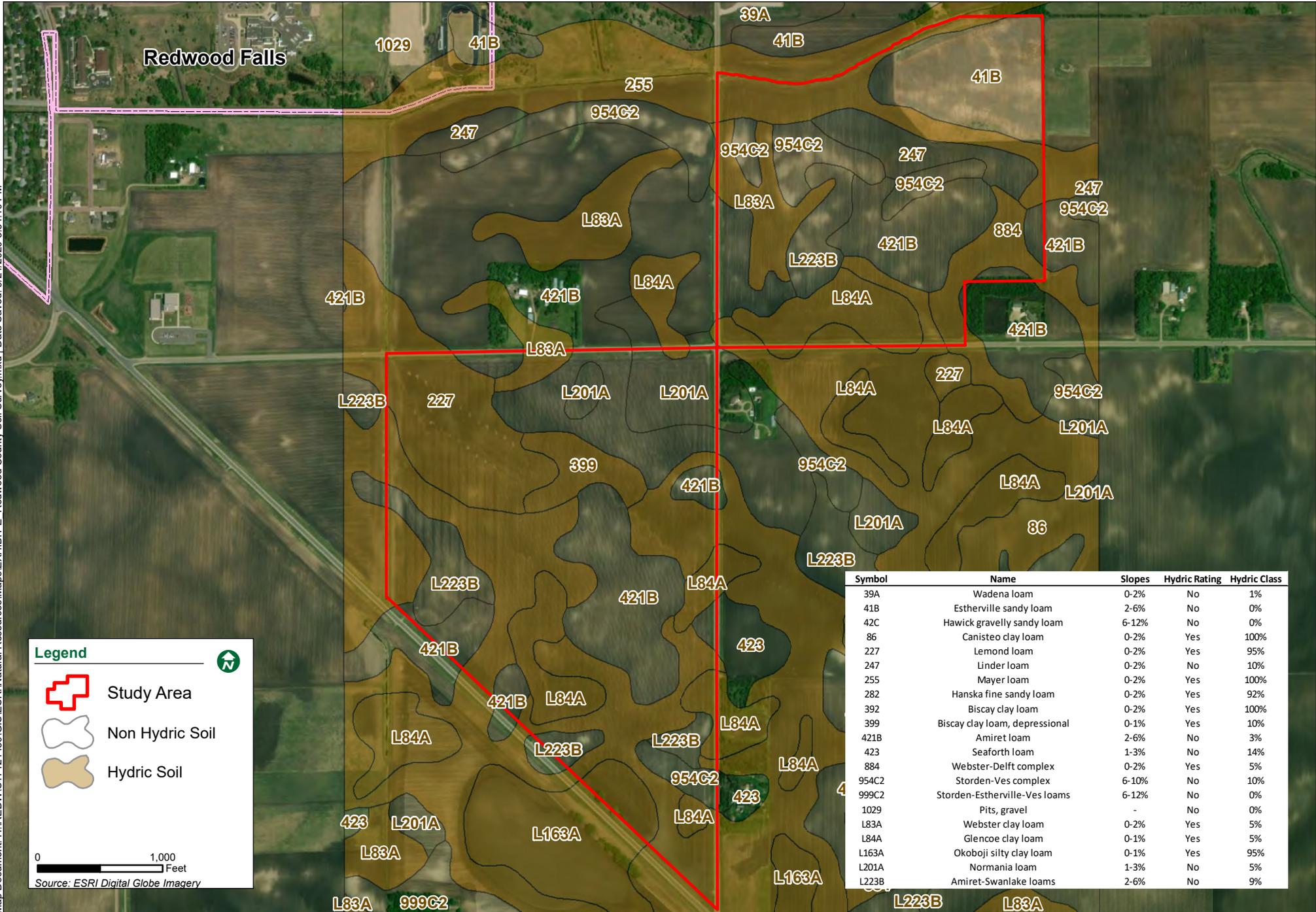


Legend

- Study Area
- PWI Basin
- PWI Watercourse

0 3,000 Feet
Source: ESRI Digital Globe Imagery

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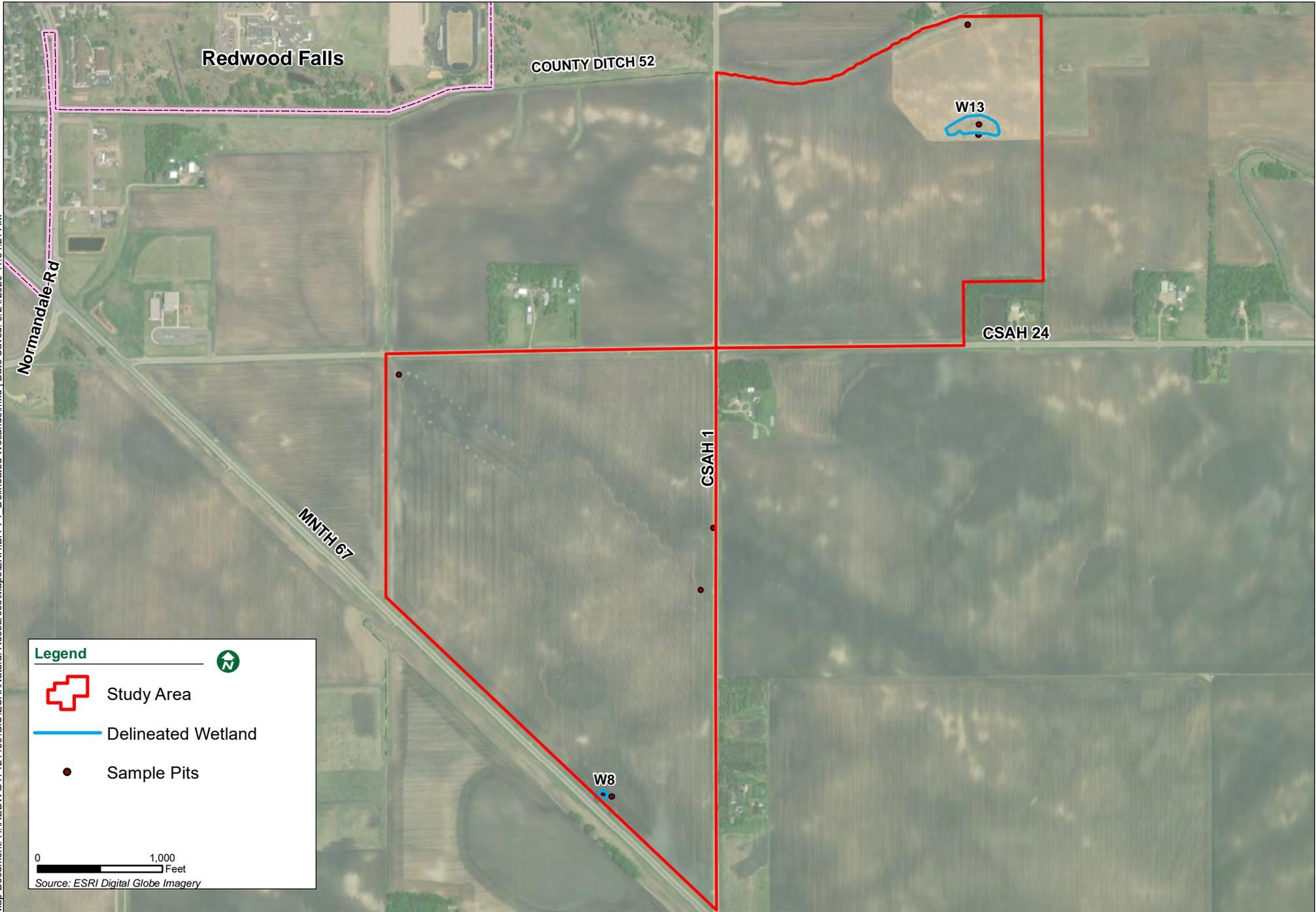
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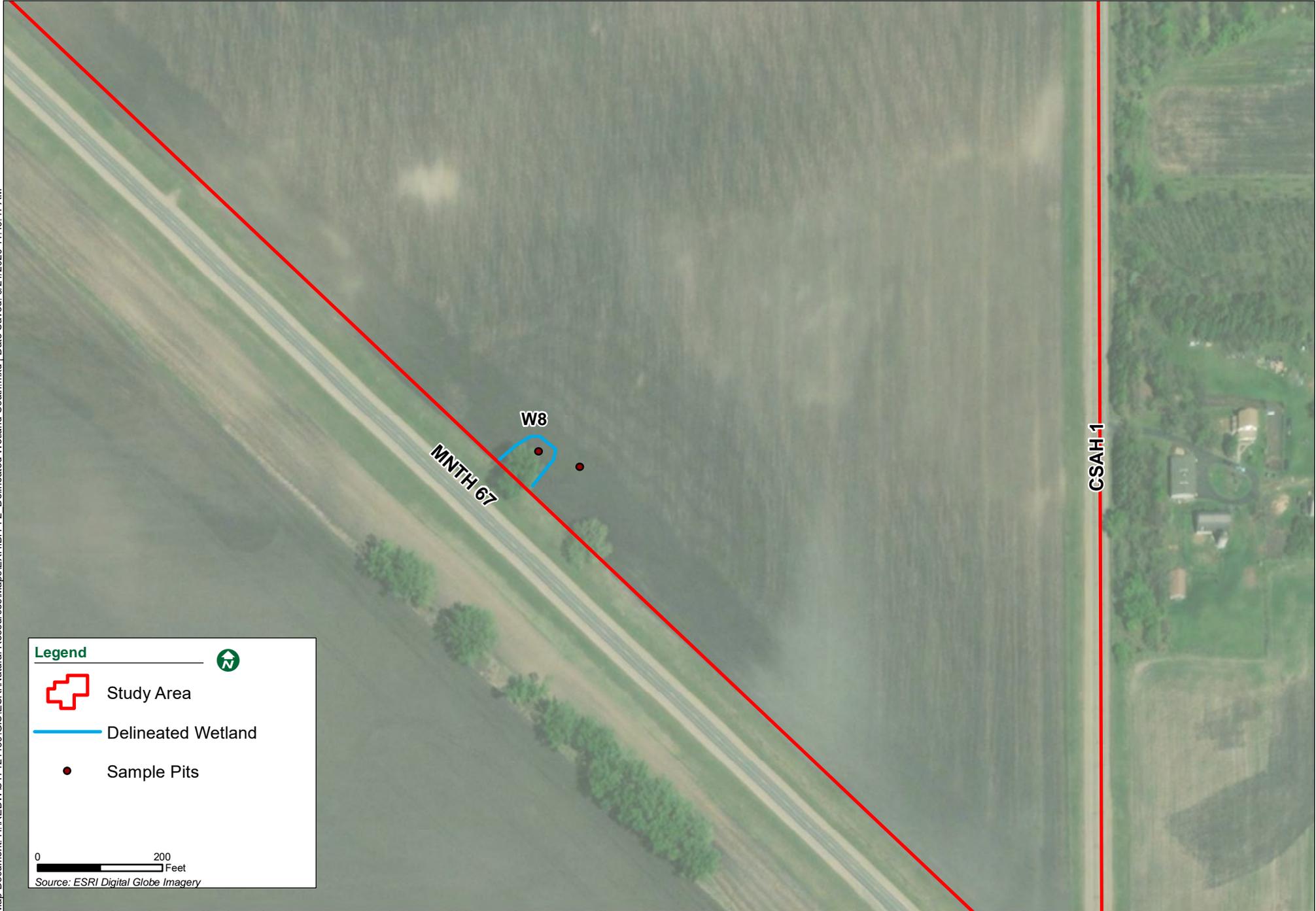
- Study Area
- Non Hydric Soil
- Hydric Soil

0 1,000 Feet
Source: ESRI Digital Globe Imagery

Symbol	Name	Slopes	Hydric Rating	Hydric Class
39A	Wadena loam	0-2%	No	1%
41B	Estherville sandy loam	2-6%	No	0%
42C	Hawick gravelly sandy loam	6-12%	No	0%
86	Canisteo clay loam	0-2%	Yes	100%
227	Lemond loam	0-2%	Yes	95%
247	Linder loam	0-2%	No	10%
255	Mayer loam	0-2%	Yes	100%
282	Hanska fine sandy loam	0-2%	Yes	92%
392	Biscay clay loam	0-2%	Yes	100%
399	Biscay clay loam, depressional	0-1%	Yes	10%
421B	Amiret loam	2-6%	No	3%
423	Seaforth loam	1-3%	No	14%
884	Webster-Delft complex	0-2%	Yes	5%
954C2	Storden-Ves complex	6-10%	No	10%
999C2	Storden-Estherville-Ves loams	6-12%	No	0%
1029	Pits, gravel	-	No	0%
L83A	Webster clay loam	0-2%	Yes	5%
L84A	Glencoe clay loam	0-1%	Yes	5%
L163A	Okoboji silty clay loam	0-1%	Yes	95%
L201A	Normania loam	1-3%	No	5%
L223B	Amiret-Swanlake loams	2-6%	No	9%



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Legend

-  Study Area
-  Delineated Wetland
-  Sample Pits



0 200 Feet

Source: ESRI Digital Globe Imagery

Map Document: H:\REDWOOD\17121459\GIS\ESRI\Natural Resources\Maps\EXHIBIT F3_Delineated Wetland North.mxd | Date Saved: 9/24/2020 11:56:40 AM

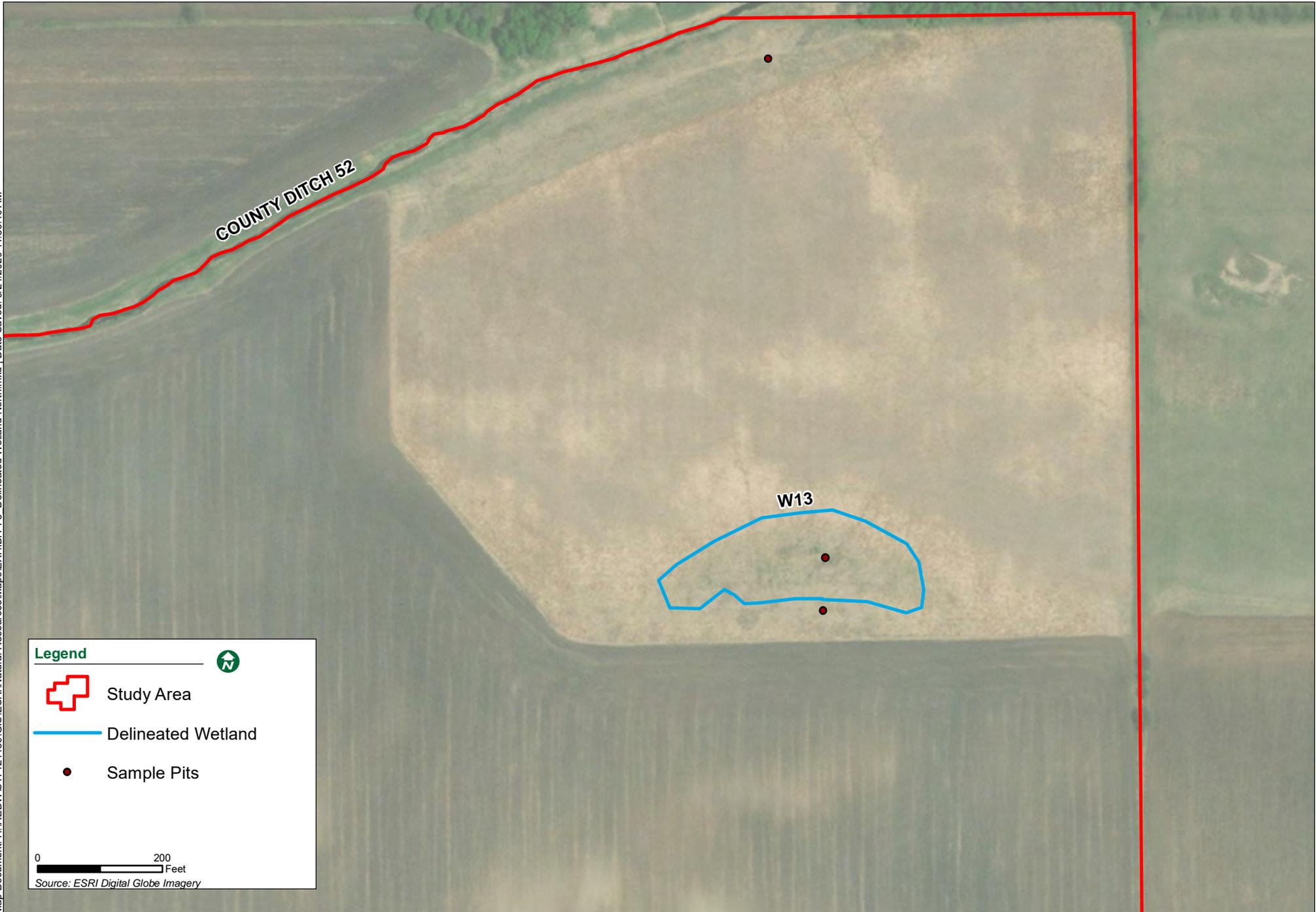


EXHIBIT G

Delineation Data Sheets



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: W8 Up
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 8-112-35
Landforms (hillside, terrace, etc.): Footslope Local Relief (concave, convex, none): Linear
Slope (%): 1 Latitude: 44.519 Longitude: -95.0811 Datum:
Soil Map Unit Name: Okojoji silty clay loam NWI Classification: PEMA
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils, or hydrology X significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 3 columns: Question, Answer, and Summary. Rows include: Hydrophytic vegetation present? Yes; Hydric soils present? No; Wetland hydrology present? No; Is the sampled area within a wetland? No

Remarks: This field appears to be drained. A tile outlet was seen a few feet to the east of this low area.

VEGETATION - Use scientific names of plants

Vegetation data table with columns: Stratum, Plot size, Absolute % Cover, Dominant Species, Indicator Status. Includes sections for Tree, Sapling/Shrub, Herb, and Woody vine strata. Also includes Dominance Test Worksheet, Prevalence Index Worksheet, and Hydrophytic Vegetation Indicators.

Remarks: The crops in this area showed no crop stress.



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

Sample Point: W8 Up

(Midwest Region)

SOILS

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

Table with columns: Depth (inches), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type*, Loc**), Texture, Remarks. Rows include depths 0-7, 7-21, and 21-45 inches.

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

Hydric Soil Indicators:

- ___ Histisol (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 Material (S1)
___ 5 cm Mucky Peat or Peat (S3)

- ___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Material (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils*:

- ___ Coast Prairie Redox (A16)(LRR K,L,R)
___ Dark Surface (S7)(LRR K, L)
___ Iron-Manganese Masses (F12)(LRR K, L, R)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soils Present? No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Crack (B6)
___ 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)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? No Depth (inches): _____
Water Table Present? No Depth (inches): _____
Saturation Present? No Depth (inches): _____

Indicators of Wetland Hydrology Present? No

Remarks:



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: W8 W
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 8-112-35
Landforms (hillside, terrace, etc.): Depression Local Relief (concave, convex, none): Concave
Slope (%): 0 Latitude: 44.519 Longitude: -95.0811 Datum:
Soil Map Unit Name: Okoboji silty clay loam NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils, or hydrology X significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 3 rows: Hydrophytic vegetation present? Yes, Hydric soils present? Yes, Wetland hydrology present? Yes. Is the sampled area within a wetland? Yes

Remarks: This field appears to be drained. A tile outlet was seen a few feet to the east of this low area.

VEGETATION - Use scientific names of plants

Vegetation data table with columns: Tree Stratum, Sapling/Shrub stratum, Herb stratum, Woody vine stratum. Includes Dominance Test Worksheet, Prevalence Index Worksheet, and Hydrophytic Vegetation Indicators.

Remarks: This low area was the only area that showed crop stress to either the beans or the corn. If left alone this area will likely have hydric vegetation.



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

Sample Point: W8 W

(Midwest Region)

SOILS

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

Table with columns: Depth (inches), Matrix (Color, %), Redox Features (Color, %, Type, Loc), Texture, Remarks. Rows show soil profile data from 0-10 to 36-45 inches.

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

Hydric Soil Indicators:

- ___ Histisol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
X Thick Dark Surface (A12)
___ Sandy Mucky Material (S1)
___ 5 cm Mucky Peat or Peat (S3)

- ___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Material (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils*:

- ___ Coast Prairie Redox (A16)(LRR K,L,R)
___ Dark Surface (S7)(LRR K, L)
___ Iron-Manganese Masses (F12)(LRR K, L, R)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type:
Depth (inches):

Hydric Soils Present? Yes

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? No
Water Table Present? No
Saturation Present? Yes
Depth (inches): 36

Indicators of Wetland Hydrology Present? Yes

Remarks:



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: W12 Up
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 5-112-35
Landforms (hillside, terrace, etc.): Footslope Local Relief (concave, convex, none): Linear
Slope (%): 2 Latitude: 44.5342 Longitude: -95.0676 Datum:
Soil Map Unit Name: Mayer Loam NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils X, or hydrology significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 3 rows: Hydrophytic vegetation present? No; Hydric soils present? No; Wetland hydrology present? No. Is the sampled area within a wetland? No

Remarks: Based upon soil map, contour map and the soil found this sample site has been altered from the original landscape.

VEGETATION - Use scientific names of plants

Table with columns: Tree Stratum, Sapling/Shrub stratum, Herb stratum, Woody vine stratum, Absolute % Cover, Dominant Species, Indicator Status, Dominance Test Worksheet, Prevalence Index Worksheet, Hydrophytic Vegetation Indicators. Includes species names like Sorghastrum nutans, Solidago altissima, Aselepias syriaca, Cirsium arvense, Verbena urticifolia.

Remarks:

(Midwest Region)

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-24	10YR 2/1	100					Loam	Moist
24-34	10YR 2/1	100					Clay Loam	Moist
34-45	10YR 3/2	100					Silty Clay Loam	Saturated

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

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils*:
<input type="checkbox"/> Histisol (A1)	<input type="checkbox"/> Coast Prairie Redox (A16)(LRR K,L,R)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Dark Surface (S7)(LRR K, L)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Iron-Manganese Masses (F12)(LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (Explain in remarks)
<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Material (S1)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Material (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soils Present? <u>No</u>
---	--

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:	Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Crack (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence or Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Gauge or Well Data (C7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? <u>No</u> Water Table Present? <u>No</u> Saturation Present? <u>Yes</u>	Depth (inches): _____ Depth (inches): _____ Depth (inches): <u>34</u>	Indicators of Wetland Hydrology Present? <u>No</u>
--	---	---

Remarks: _____



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
 Applicant/Owner: Redwood Falls State: MN Sample Point: W12 W
 Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 5-112-35
 Landforms (hillside, terrace, etc.): Depression Local Relief (concave, convex, none): Concave
 Slope (%): 0 Latitude: 44.5342 Longitude: -95.0676 Datum: _____
 Soil Map Unit Name: Estherville loam, 2-6% slope NWI Classification: PEMA
 Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
 Are vegetation X, soils X, or hydrology _____ significantly disturbed? Are normal circumstances present? Yes
 Are vegetation _____, soils _____, or hydrology _____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	<u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u>
Hydric soils present?	<u>Yes</u>	
Wetland hydrology present?	<u>Yes</u>	

Remarks: Based upon soil map, contour map and the soil found this sample site has been altered from the original landscape.

VEGETATION - Use scientific names of plants

Tree Stratum	(Plot size: <u>30 feet</u>)	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test Worksheet	
1	<u>Salix intertior</u>	<u>50</u>	<u>Yes</u>	<u>FACW</u>	Number of dominant species that are OBL, FACW, or FAC: <u>5</u> (A)	
2	<u>Salix alba</u>	<u>40</u>	<u>Yes</u>	<u>FACW</u>	Total number of dominant species across all strata: <u>5</u> (B)	
3	_____	_____	_____	_____	Percent of dominant species that are OBL, FACW or FAC: <u>100%</u> (A/B)	
4	_____	_____	_____	_____		
5	_____	_____	_____	_____		
		<u>90</u>	=Total Cover			
Sapling/Shrub stratum	(Plot size: <u>15 feet</u>)				Prevalence Index Worksheet	
1	_____	_____	_____	_____	Total % cover of:	
2	_____	_____	_____	_____	OBL Species: <u>60</u> x 1 = <u>60</u>	
3	_____	_____	_____	_____	FACW Species: <u>190</u> x 2 = <u>380</u>	
4	_____	_____	_____	_____	FAC Species: <u>0</u> x 3 = <u>0</u>	
5	_____	_____	_____	_____	FACU species: <u>0</u> x 4 = <u>0</u>	
		<u>0</u>	=Total Cover		UPL Species: <u>0</u> x 5 = <u>0</u>	
					Totals: <u>250</u> (A) <u>440</u> (B)	
					Prevalence Index (B/A): <u>1.76</u>	
Herb stratum:	(Plot size: <u>5 feet</u>)				Hydrophytic Vegetation Indicators	
1	<u>Phalaris arundinacea</u>	<u>70</u>	<u>Yes</u>	<u>FACW</u>	<input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation	
2	<u>Scirpus atrovirens</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	<input checked="" type="checkbox"/> Dominance test >50%	
3	<u>Schoenoplectus tabernaemontani</u>	<u>30</u>	<u>Yes</u>	<u>OBL</u>	<input checked="" type="checkbox"/> Prevalence index is ≤3.0*	
4	<u>Solidago gigantea</u>	<u>30</u>	<u>Yes</u>	<u>FACW</u>	Morphological adaptations* (Provide supporting data in remarks)	
5	_____	_____	_____	_____	Problematic hydrophytic vegetation* (Explain in remarks)	
6	_____	_____	_____	_____		
7	_____	_____	_____	_____		
8	_____	_____	_____	_____		
9	_____	_____	_____	_____		
10	_____	_____	_____	_____		
		<u>160</u>	=Total Cover			
Woody vine stratum:	(Plot size: <u>15 feet</u>)				*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
1	_____	_____	_____	_____		
2	_____	_____	_____	_____		
		<u>0</u>	=Total Cover		Hydrophytic vegetation present? <u>Yes</u>	

Remarks:



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

Sample Point: W12 W

(Midwest Region)

SOILS

Table with columns: Depth (inches), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type*, Loc**), Texture, Remarks. Rows include 0-24 and 24-46 depth intervals.

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils*:

- ___ Coast Prairie Redox (A16)(LRR K,L,R)
___ Dark Surface (S7)(LRR K, L)
___ Iron-Manganese Masses (F12)(LRR K, L, R)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type:
Depth (inches):

Hydric Soils Present? Yes

Remarks:

HYDROLOGY

Table with columns: Primary Indicators (minimum of one is required; check all that apply), Secondary Indicators (minimum of two required). Rows include Surface Water (A1), High Water Table (A2), Saturation (A3), Water Marks (B1), Sediment Deposits (B2), Drift Deposits (B3), Algal Mat or Crust (B4), Iron Deposits (B5), Inundation Visible on Aerial Imagery (B7), Sparsely Vegetated Concave Surface (B8), Water-Stained Leaves (B9), Aquatic Fauna (B13), True Aquatic Plants (B14), Hydrogen Sulfide Odor (C1), Oxidized Rhizospheres on Living Roots (C3), Presence or Reduced Iron (C4), Recent Iron Reduction in Tilled Soils (C6), Thin Muck Surface (C7), Gauge or Well Data (C7), Other (Explain in Remarks), Surface Soil Crack (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? No
Water Table Present? No
Saturation Present? Yes
Depth (inches): 24

Indicators of Wetland Hydrology Present? Yes

Remarks:



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: 1
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 8-112-35
Landforms (hillside, terrace, etc.): Flat Local Relief (concave, convex, none): Linear
Slope (%): 0 Latitude: 44.5279 Longitude: -95.0874 Datum:
Soil Map Unit Name: Lemond NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils X, or hydrology significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 3 rows: Hydrophytic vegetation present? No; Hydric soils present? No; Wetland hydrology present? No. Is the sampled area within a wetland? No

Remarks: This area is adjacent to a large drainage ditch. Water in ditch was about 15 feet deep. The drain tiles were dry.

VEGETATION - Use scientific names of plants

Vegetation data table with columns: Tree Stratum, Sapling/Shrub stratum, Herb stratum, Woody vine stratum, Absolute % Cover, Dominant Species, Indicator Status. Includes Dominance Test Worksheet, Prevalence Index Worksheet, and Hydrophytic Vegetation Indicators.

Remarks: There was no apparent stress in the corn.



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**EXHIBIT G:
WETLAND DETERMINATION DATA FORM**

Sample Point: 1

(Midwest Region)

SOILS

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-14	10YR 2/1	100					Clay Loam	Dry
14-18	2.5Y 3/1	100					Clay Loam	Dry
18-33	2.5Y 6/2	100					Loam	Dry, Carbonate modules visible
33-45	2.5Y 6/2	70	2.5y 4/6	30	C	M	Clay Loam	Moist, Calcic Horizon

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

Hydric Soil Indicators:

- Histisol (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 Material (S1)
- 5 cm Mucky Peat or Peat (S3)

- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Loamy Mucky Material (F1)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils*:

- Coast Prairie Redox (A16)(LRR K,L,R)
- Dark Surface (S7)(LRR K, L)
- Iron-Manganese Masses (F12)(LRR K, L, R)
- Very Shallow Dark Surface (TF12)
- Other (Explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soils Present? No

Remarks: _____

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- Surface Soil Crack (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? No Depth (inches): _____
 Water Table Present? No Depth (inches): _____
 Saturation Present? No Depth (inches): _____

Indicators of Wetland Hydrology Present? No

Remarks: _____



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: 2
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 8-112-35
Landforms (hillside, terrace, etc.): Flat Local Relief (concave, convex, none): Linear
Slope (%): 1 Latitude: 44.5244 Longitude: -95.079 Datum:
Soil Map Unit Name: Canisteo NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils, or hydrology X significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 3 columns: Question, Answer, and Summary. Rows include: Hydrophytic vegetation present? No; Hydric soils present? No; Wetland hydrology present? No; Is the sampled area within a wetland? No

Remarks: This field appears to be drained. This site slopes to the south.

VEGETATION - Use scientific names of plants

Vegetation data table with columns: Stratum, Plot size, Absolute % Cover, Dominant Species, Indicator Status. Includes sections for Tree Stratum, Sapling/Shrub stratum, Herb stratum, and Woody vine stratum. Also includes Dominance Test Worksheet, Prevalence Index Worksheet, and Hydrophytic Vegetation Indicators.

Remarks: There was no apparent stress in the beans.

(Midwest Region)

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-10	10YR 2/1	100					Clay Loam	Moist
10-15	10YR 3/2	100					Clay Loam	Moist
15-24	2.5Y 5/2	100					Loam	Dry, Carbonate modules visible
24-30	2.5Y 5/3	70					Sandy Loam	Dry, Find Sand

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

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Material (F1) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> 2 cm Muck (A10) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Mucky Material (S1) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils*:

- | |
|---|
| <input type="checkbox"/> Coast Prairie Redox (A16)(LRR K,L,R) |
| <input type="checkbox"/> Dark Surface (S7)(LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12)(LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in remarks) |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? No

Remarks: _____

HYDROLOGY
Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Crack (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	<u>No</u>	Depth (inches): _____
Water Table Present?	<u>No</u>	Depth (inches): _____
Saturation Present?	<u>No</u>	Depth (inches): _____

 Indicators of Wetland Hydrology Present? No

Remarks: _____



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: 3
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 8-112-35
Landforms (hillside, terrace, etc.): Flat Local Relief (concave, convex, none): Linear
Slope (%): 0 Latitude: 44.5244 Longitude: -95.079 Datum:
Soil Map Unit Name: Canisteo NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils, or hydrology X significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 3 rows: Hydrophytic vegetation present? No; Hydric soils present? No; Wetland hydrology present? No. Is the sampled area within a wetland? No

Remarks: This field appears to be drained. This site is on edge of field road at the lowest point of the field.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: 30 feet) Absolute % Cover, Dominant Species, Indicator Status. Sapling/Shrub stratum (Plot size: 15 feet). Herb stratum (Plot size: 5 feet) Soy Beans 100% Yes UPL. Woody vine stratum (Plot size: 15 feet). Dominance Test Worksheet: Number of dominant species that are OBL, FACW, or FAC: 5 (A); Total number of dominant species across all strata: 5 (B); Percent of dominant species that are OBL, FACW or FAC: 100% (A/B). Prevalence Index Worksheet: OBL Species: 0 x 1 = 0; FACW Species: 0 x 2 = 0; FAC Species: 0 x 3 = 0; FACU species: 0 x 4 = 0; UPL Species: 100 x 5 = 500; Totals: 100 (A) 500 (B); Prevalence Index (B/A): 5.00. Hydrophytic Vegetation Indicators: Rapid test for hydrophytic vegetation; Dominance test >50%; Prevalence index is <= 3.0*; Morphological adaptations* (Provide supporting data in remarks); Problematic hydrophytic vegetation* (Explain in remarks). *Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic vegetation present? No

Remarks: There was no apparent stress in the beans.



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

Sample Point: 3

(Midwest Region)

SOILS

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

Table with columns: Depth (inches), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type*, Loc**), Texture, Remarks. Rows include depth intervals from 0-12 to 40-46 inches.

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

Hydric Soil Indicators:

- ___ Histisol (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 Material (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Material (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils*:

- ___ Coast Prairie Redox (A16)(LRR K,L,R)
___ Dark Surface (S7)(LRR K, L)
___ Iron-Manganese Masses (F12)(LRR K, L, R)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type:
Depth (inches):

Hydric Soils Present? No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- ___ Surface Soil Crack (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? No
Water Table Present? No
Saturation Present? No
Depth (inches):

Indicators of Wetland Hydrology Present? No

Remarks:

(Midwest Region)

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-15	10YR 3/3	100					Sandy Loam	Dry, Fine Sand
15-21	10YR 3/3	100					Sandy Loam	Moist, Fine Sand
21-34	10YR 2/1	100					Loam	Moist
34-46	10YR 3/2	100					Sandy Loam	Moist, Fine Sand

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

Hydric Soil Indicators:

- | | |
|--|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Material (F1) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) |
| <input type="checkbox"/> 2 cm Muck (A10) | <input type="checkbox"/> Depleted Matrix (F3) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) |
| <input type="checkbox"/> Sandy Mucky Material (S1) | <input type="checkbox"/> Redox Depressions (F8) |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) | |

Indicators for Problematic Hydric Soils*:

- | |
|---|
| <input type="checkbox"/> Coast Prairie Redox (A16)(LRR K,L,R) |
| <input type="checkbox"/> Dark Surface (S7)(LRR K, L) |
| <input type="checkbox"/> Iron-Manganese Masses (F12)(LRR K, L, R) |
| <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Other (Explain in remarks) |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

 Type: _____
 Depth (inches): _____

 Hydric Soils Present? No

Remarks: _____

HYDROLOGY
Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

- | |
|--|
| <input type="checkbox"/> Surface Soil Crack (B6) |
| <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Stunted or Stressed Plants (D1) |
| <input type="checkbox"/> Geomorphic Position (D2) |
| <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present?	<u>No</u>	Depth (inches): _____
Water Table Present?	<u>No</u>	Depth (inches): _____
Saturation Present?	<u>No</u>	Depth (inches): _____

 Indicators of Wetland Hydrology Present? No

Remarks: _____



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EXHIBIT G: WETLAND DETERMINATION DATA FORM

(Midwest Region)

Project/Site: SE DEVELOPMENT AREA City/County: Redwood Falls/Redwood Sampling Date: 9/16/2020
Applicant/Owner: Redwood Falls State: MN Sample Point: 4
Investigator(s): Mark Perry, WDC 1129 Section, Township, Range: 5-112-35
Landforms (hillside, terrace, etc.): Terrace Local Relief (concave, convex, none): Linear
Slope (%): 0 Latitude: 44.5368 Longitude: -95.0674 Datum:
Soil Map Unit Name: Mayer Loam NWI Classification: None
Are climatic/hydrologic conditions of the site typical for this time of year? Yes (If no, explain in remarks)
Are vegetation X, soils, or hydrology X significantly disturbed? Are normal circumstances present? Yes
Are vegetation, soils, or hydrology naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS

Table with 2 columns: Question and Answer.
Hydrophytic vegetation present? Yes
Hydric soils present? No
Wetland hydrology present? No
Is the sampled area within a wetland? No

Remarks: This pit is very close to a large drainage ditch. Water in the ditch was about 15 feet below the soil surface. This area appears to be a RIM or CRP area, planted to native vegetation. The sample pit is on the edge of Estherville soil, a gravelly soil.

VEGETATION - Use scientific names of plants

Main data table with columns: Stratum, Species, Absolute % Cover, Dominant Species, Indicator Status. Includes sub-tables for Dominance Test Worksheet, Prevalence Index Worksheet, and Hydrophytic Vegetation Indicators.

Remarks:

EXHIBIT H

Off-Site Hydrology Assessment



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EXHIBIT F: OFF-SITE HYDROLOGY ASSESSMENT RECORDING FORM

Project/Site: Redwood Falls Site City/County: Redwood Falls/Redwood Date: 6/1/2020
 Applicant/Owner: Redwood Falls State: Minnesota
 Investigator(s): Mark Perry Sec, Twp, Ran: 5-112-35
 WETS Station ID: Redwood-Paxton-Redwood Falls

Date:	Source:	Climatic Condition:	Image Interpretations							
			Site 9	Site 10	Site 11	Site 12	Site 13	Site 6	Site 7	Site 8
1979										
1980										
1981										
1982										
1983										
1984	FSA	Wet	WS	WS	WS	DO	NV			
1985	FSA	Wet	NV	WS	NV	AP	WS			
1986	FSA	Wet	NV	NV	NV	AP	WS			
1987	FSA	Dry	NV	NV	NV	AP	NV			
1988	FSA	Dry	NV	NV	NV	WS	WS			
1989	FSA	Normal	NV	NV	NV	WS	NV			
1990	FSA	Normal	WS	NV	NV	WS	WS			
1991	FSA	Wet	WS	WS	NV	AP	WS			
1992	FSA									
1993	FSA									
1994	FSA	Dry	NV	NV	NV	WS	WS			
1995	FSA	Wet	WS	NV	WS	AP	NV			
1996	FSA	Normal	NV	NV	NV	NV	NV			
1997	FSA	Dry	NV	NV	NV	NV	NV			
1998	FSA	Normal	NV	NV	NV	CS	WS			
1999	FSA	Normal	NV	NV	NV	NV	WS			
2000	FSA	Dry	WS	WS	NV	NV	NV			
2001										
2002										
2003	FSA	Dry	NV	NV	NV	WS	NV			
2004										
2005										
2006	FSA	Normal	NV	NV	NV	WS	NV			
2007										
2008	FSA	Normal	NV	NV	NV	DO	NV			
2009	FSA	Dry	NV	NV	NV	WS	WS			
2010	FSA	Normal	NV	NV	NV	WS	WS			
2011										
2012										
2013	FSA	Normal	NV	NV	NV	NV	WS			
2014										
2015	FSA	Normal	NV	NV	NV	AP	WS			
2016										
2017	FSA	Normal	NV	NV	NV	AP	WS			
		Hydric Soil	Yes	Yes	Yes	Yes	Yes			
		NWI	No	No	No	Yes	No			
		Normal Years	11	11	11	11	11			
		Wet Signatures	1	0	0	7	7			
		Percent Wet Signatures	9.1%	0.0%	0.0%	63.6%	63.6%	0.0%	0.0%	0.0%
		Field Verification required	No	No	No	No	No			

NV - Normal Vegetation, WS - Wet Signature, CS - Crop Stress, DO - Drown Out, SW - Standing Water, AP - Altered Pattern, NC - Not Cropped

Decision Matrix					Decision Table					
Hydric soil	NWI	% Wet	Field visit?	Wetland?	Site	Hydric soil	NWI	% Wet	Field Hydro	ID #
Yes	Yes	>50%	No	Yes	9	Yes	No	0.09090909	No	No
Yes	Yes	30-50%	No	Yes	10	Yes	No	0	No	No
Yes	Yes	<30%	Yes	Yes, w/field hydro	11	Yes	No	0	No	No
Yes	No	>50%	No	Yes	12	Yes	Yes	0.63636364	Yes	Yes
Yes	No	30-50%	Yes	Yes, w/field hydro	13	Yes	No	0.63636364	Yes	Yes
Yes	No	<30%	No	No	6	0	0	0		
No	Yes	>50%	No	Yes	7	0	0	0		
No	Yes	30-50%	No	Yes	8	0	0	0		
No	Yes	<30%	Yes	No						
No	No	>50%	Yes	Yes, w/field hydro						
No	No	30-50%	Yes	Yes, w/field hydro						
No	No	<30%	No	No						



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EXHIBIT F: OFF-SITE HYDROLOGY ASSESSMENT RECORDING FORM

Project/Site: Redwood Falls Site City/County: Redwood Falls/Redwood Date: 6/1/2020
 Applicant/Owner: Redwood Falls State: Minnesota
 Investigator(s): Mark Perry Sec, Twp, Ran: 8-112-35
 WETS Station ID: Redwood-Paxton-Redwood Falls

Date:	Source:	Climatic Condition:	Image Interpretations							
			Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
1979										
1980										
1981										
1982										
1983										
1984	FSA	Wet	NV	WS	NV	DO	DO	WS	NV	NV
1985	FSA	Wet	WS	WS	NV	NV	WS	WS	NV	NV
1986	FSA	Wet	NV	NV	NV	NV	NV	NV	NV	NV
1987	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1988	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1989	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1990	FSA	Normal	NV	NV	WS	DO	DO	NV	NV	DO
1991	FSA	Wet	WS	NV	WS	WS	WS	WS	NV	DO
1992	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1993	FSA	Wet	NV	NV	NV	WS	NV	NV	NV	NC
1994	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1995	FSA	Wet	NV	WS	NV	NV	WS	WS	NV	NV
1996	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1997	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
1998	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
1999										
2000	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
2001										
2002										
2003	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
2004										
2005										
2006	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	WS
2007										
2008	FSA	Normal	WS	WS	WS	NV	NV	NV	NV	NV
2009	FSA	Dry	NV	NV	NV	NV	NV	NV	NV	NV
2010	FSA	Normal	WS	NV	WS	DO	NV	WS	NV	DO
2011										
2012										
2013	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
2014										
2015	FSA	Normal	NV	NV	NV	NV	NV	NV	NV	NV
2016										
2017	FSA	Normal	WS	NV	NV	NV	NV	WS	WS	WS
Hydric Soil			Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
NWI			No	No	No	No	No	No	No	Yes
Normal Years			11	11	11	11	11	11	11	11
Wet Signatures			3	1	3	2	1	2	1	4
Percent Wet Signatures			27.3%	9.1%	27.3%	18.2%	9.1%	18.2%	9.1%	36.4%
Field Verification required			No	No	No	No	No	No	No	Yes

NV - Normal Vegetation, WS - Wet Signature, CS - Crop Stress, DO - Drown Out, SW - Standing Water, AP - Altered Pattern, NC - Not Cropped

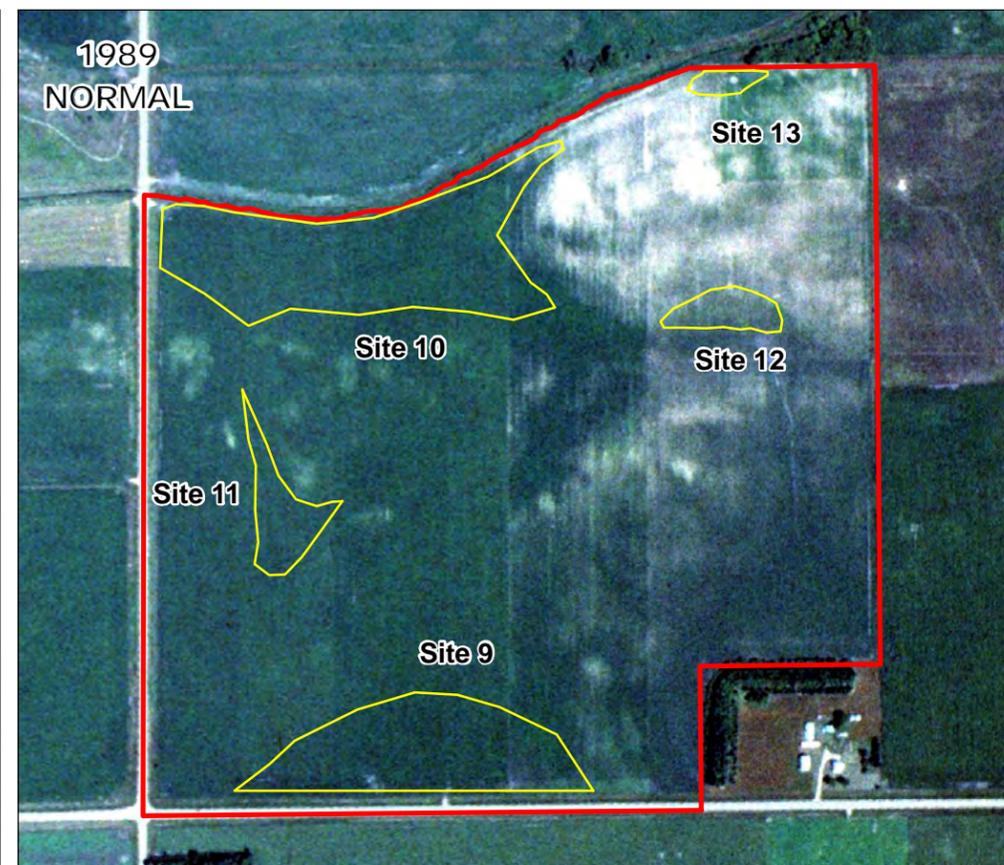
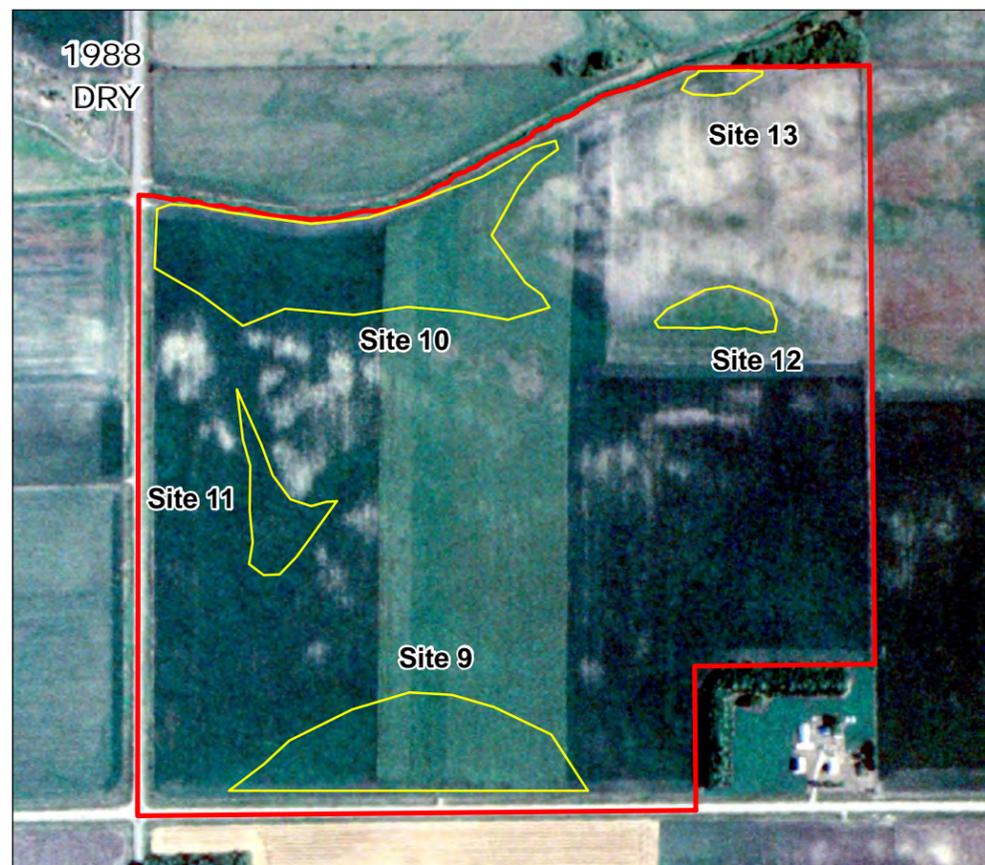
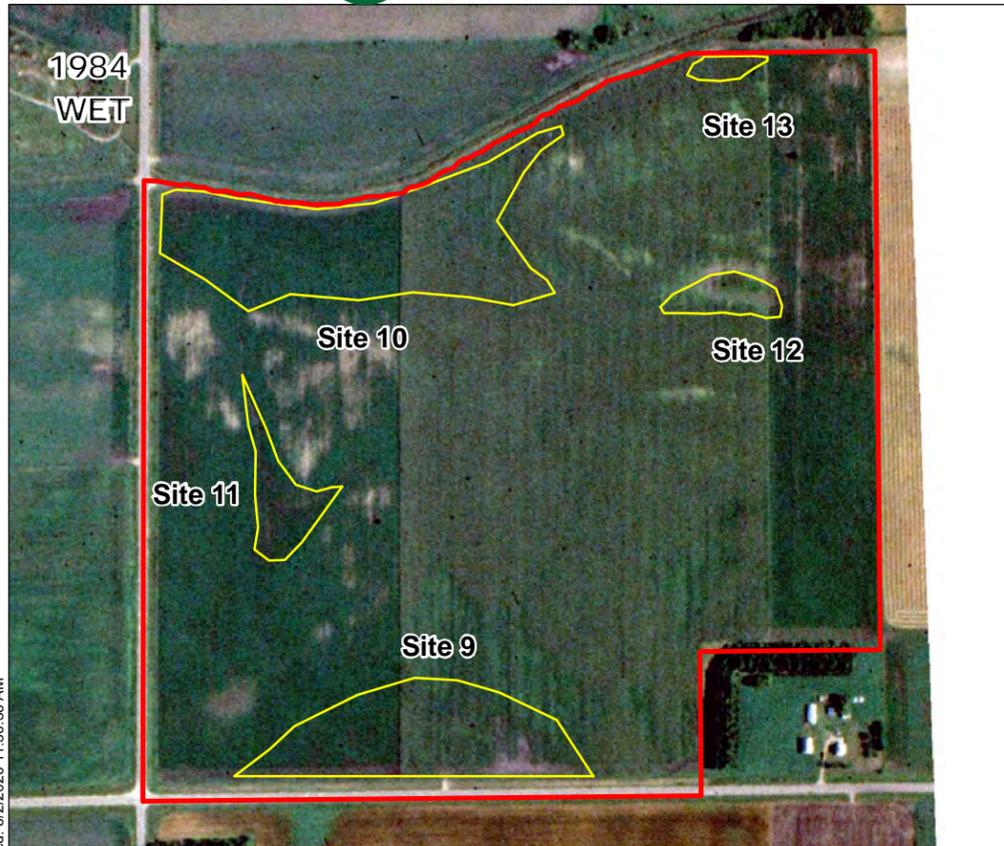
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Hydric soil	NWI	% Wet	Field visit?	Wetland?	Site	Hydric soil	NWI	% Wet	Field Hydro	ID #
Yes	Yes	>50%	No	Yes	1	Yes	No	0.27272727	No	No
Yes	Yes	30-50%	No	Yes	2	Yes	No	0.09090909	No	No
Yes	Yes	<30%	Yes	Yes, w/field hydro	3	Yes	No	0.27272727	No	No
Yes	No	>50%	No	Yes	4	Yes	No	0.18181818	No	No
Yes	No	30-50%	Yes	Yes, w/field hydro	5	Yes	No	0.09090909	No	No
Yes	No	<30%	No	No	6	Yes	No	0.18181818	No	No
No	Yes	>50%	No	Yes	7	No	No	0.09090909	No	No
No	Yes	30-50%	No	Yes	8	Yes	Yes	0.36363636	Yes	Yes
No	Yes	<30%	Yes	Yes, w/field hydro						
No	No	>50%	Yes	Yes, w/field hydro						
No	No	30-50%	Yes	Yes, w/field hydro						
No	No	<30%	No	No						



0 650 Feet

Source: FSA

June 2020



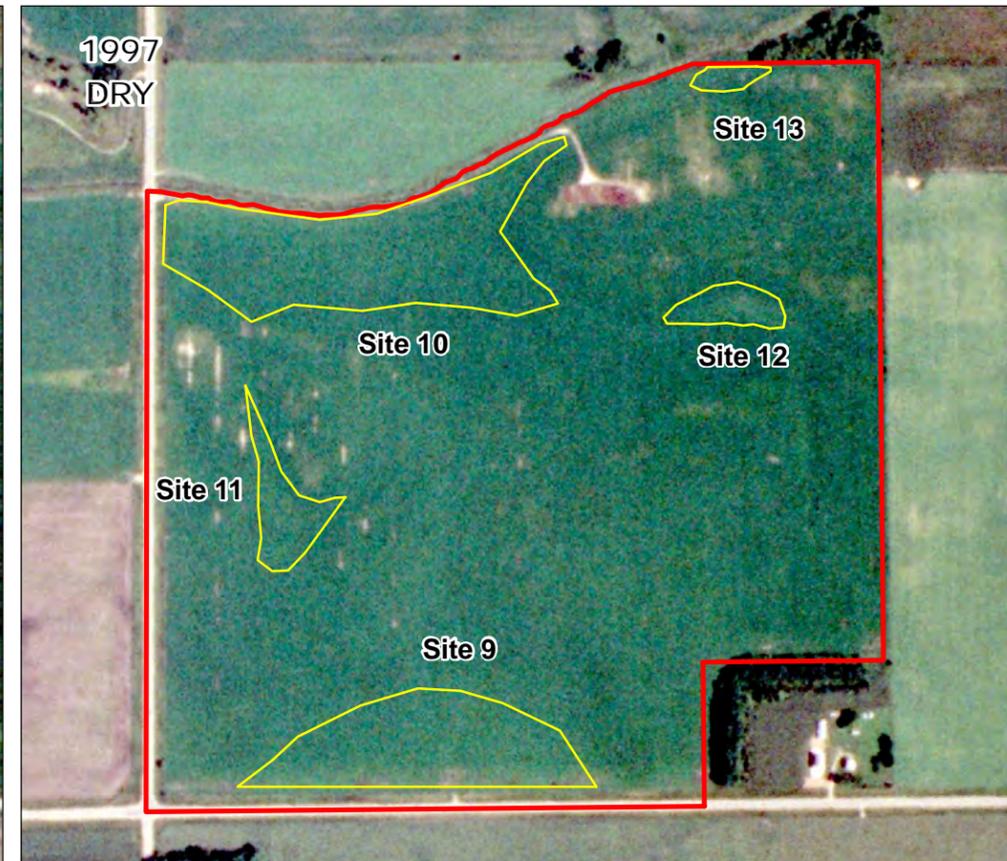
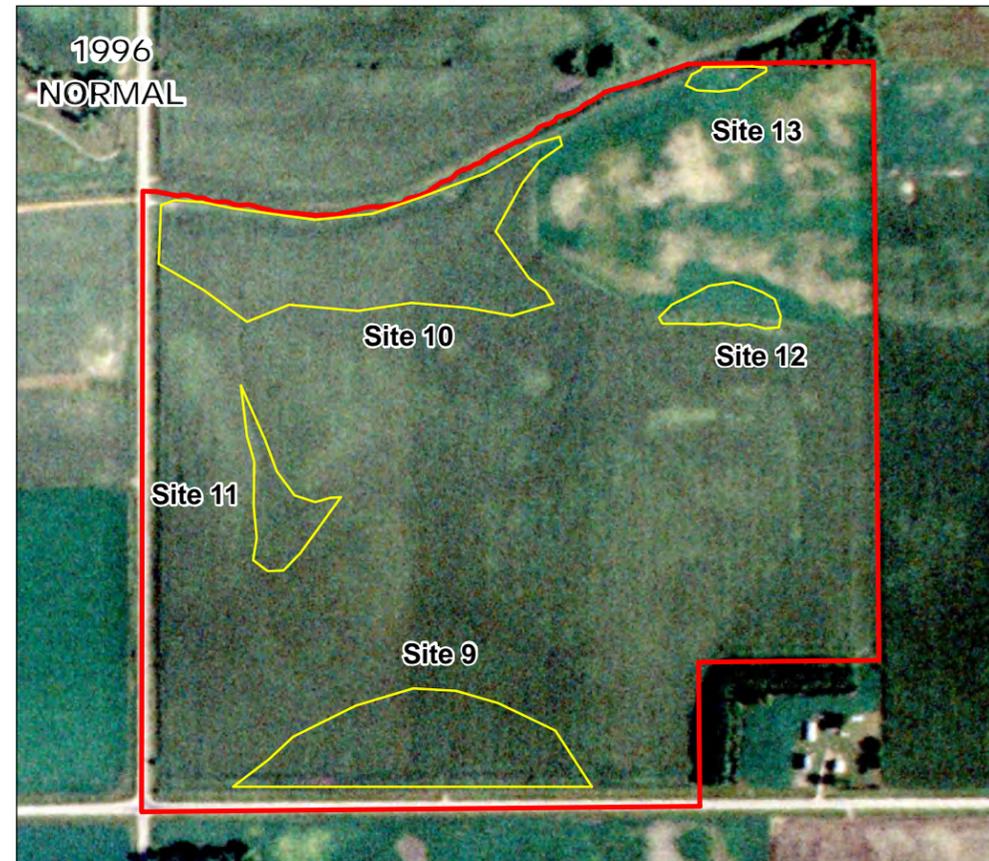
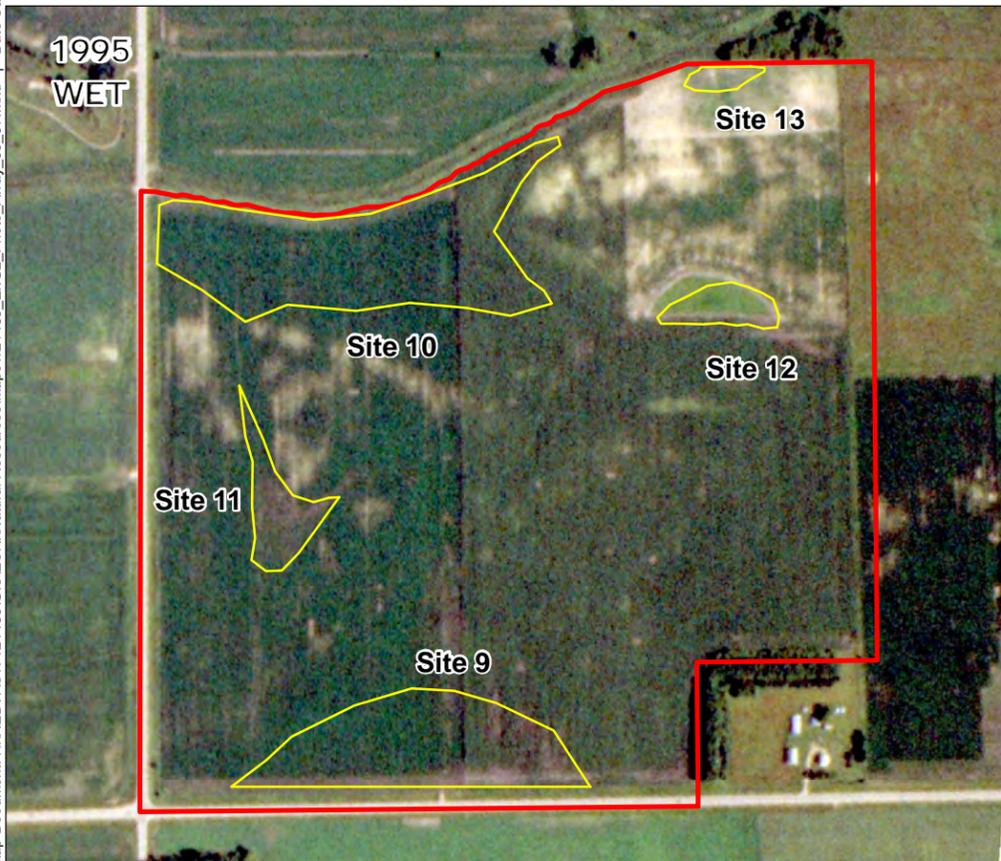
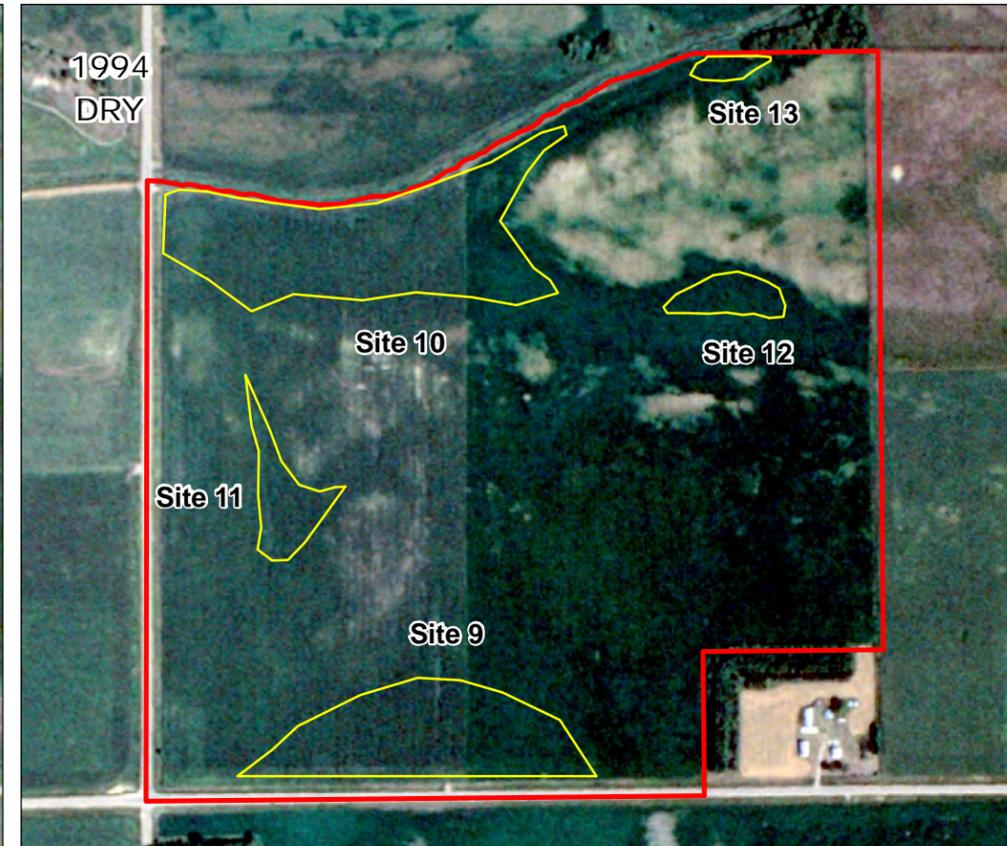
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0 650 Feet

Source: FSA

June 2020

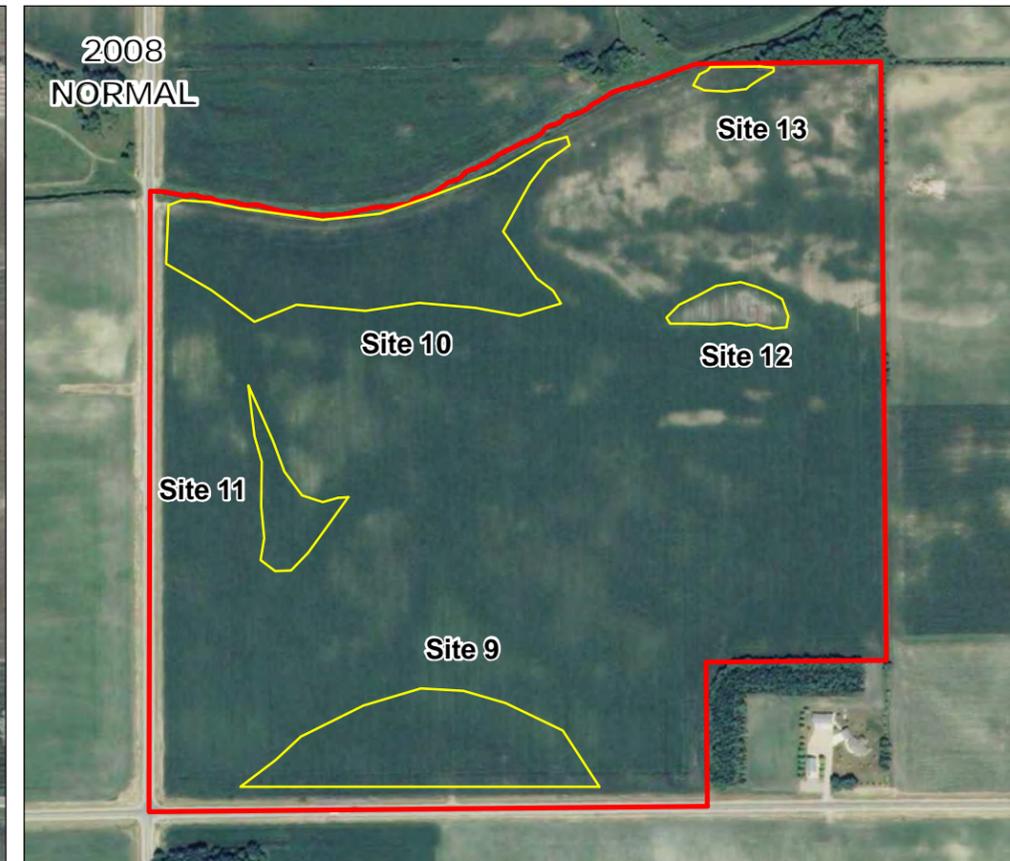
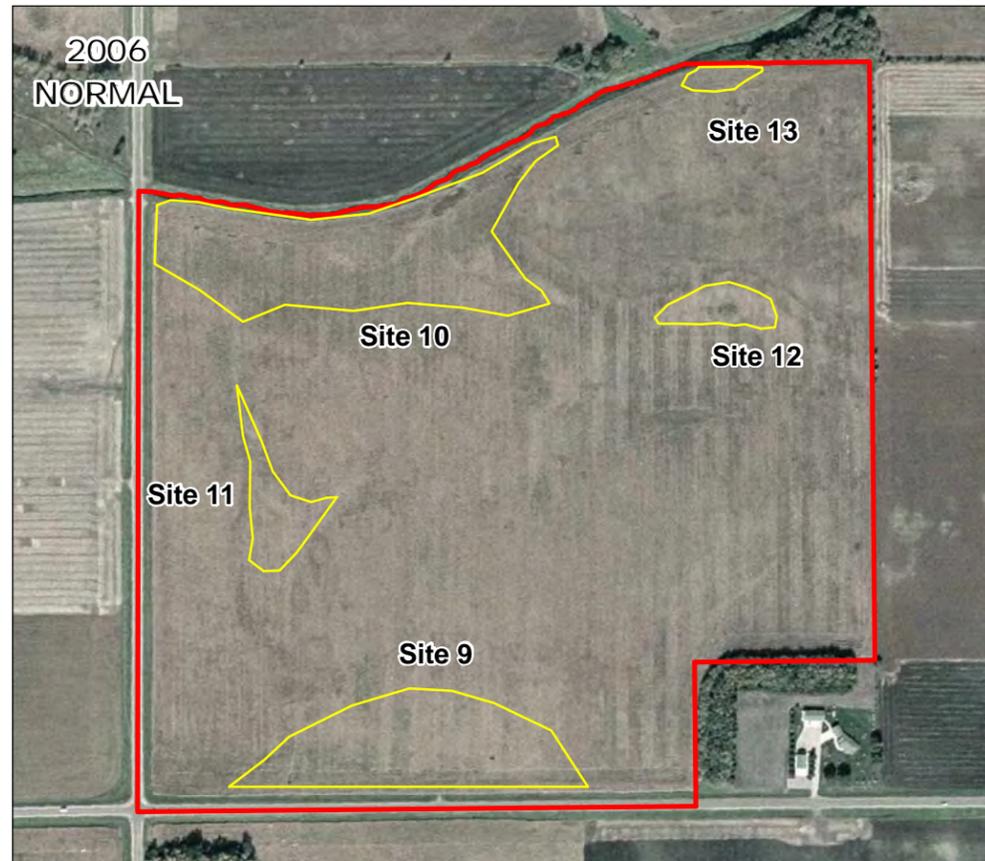
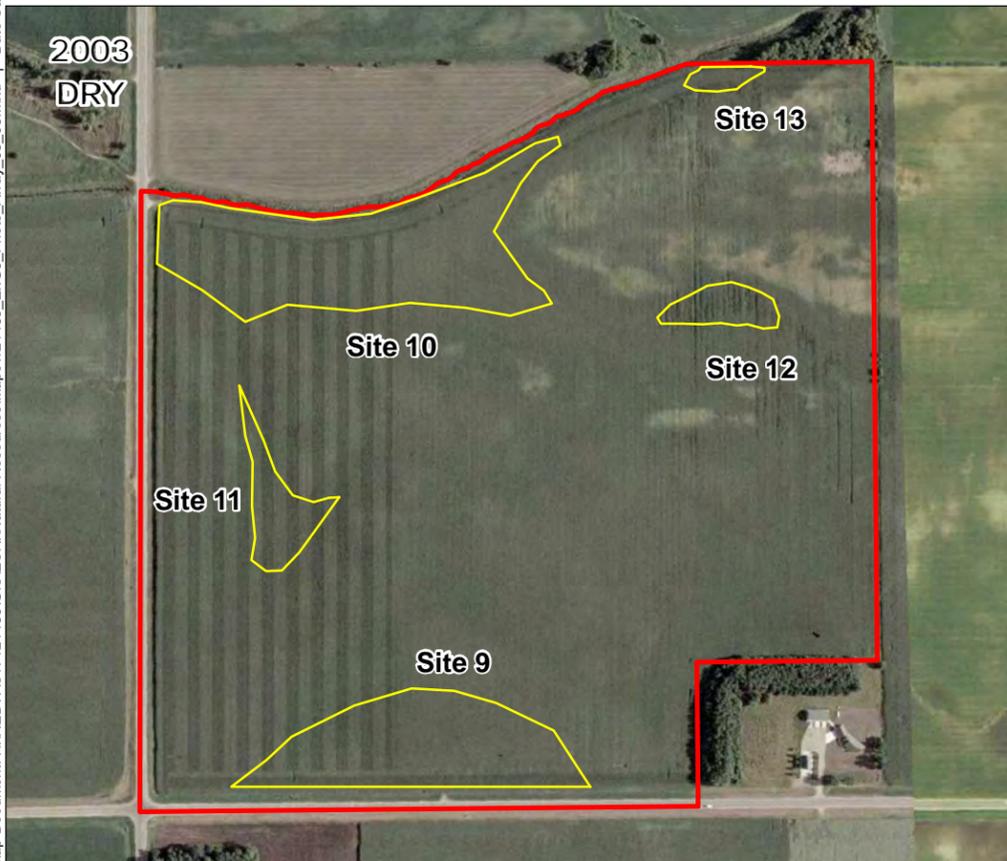
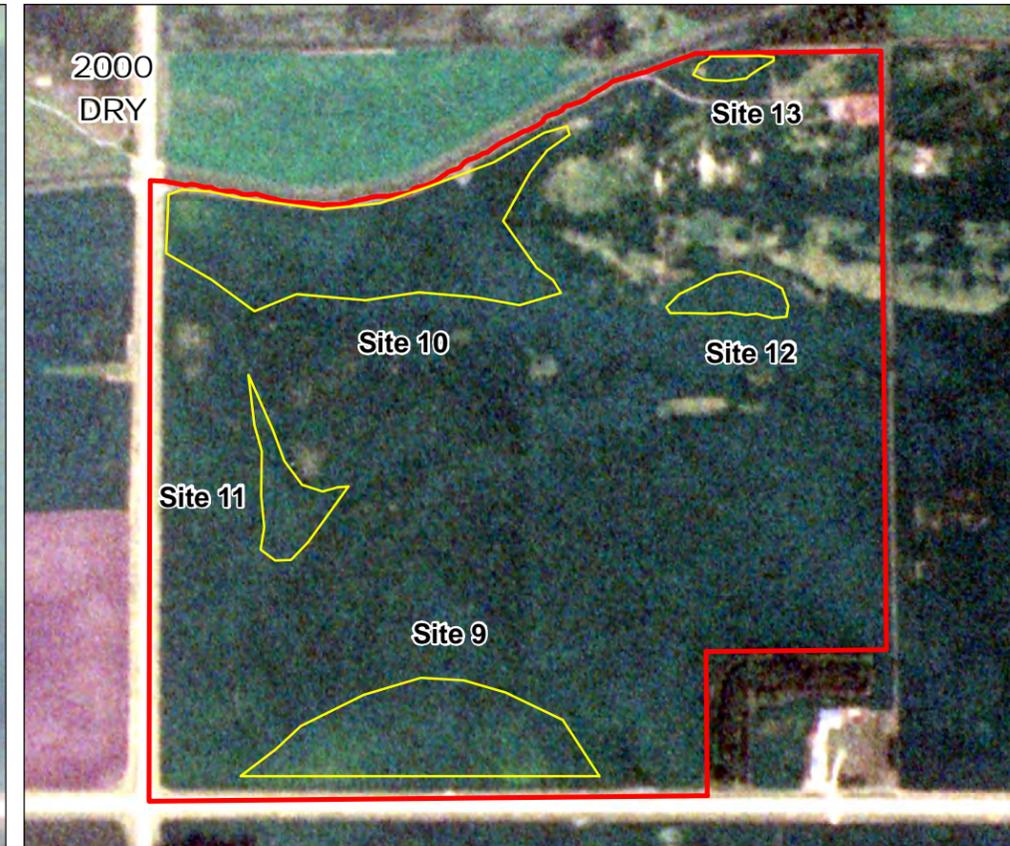
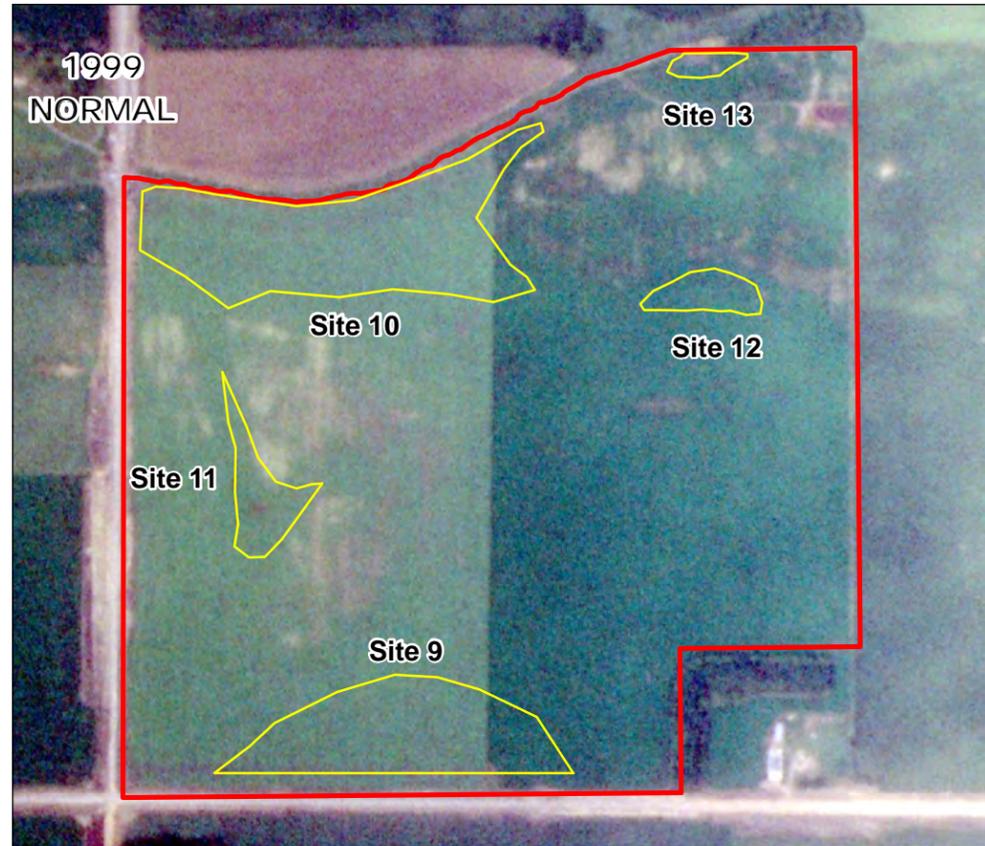
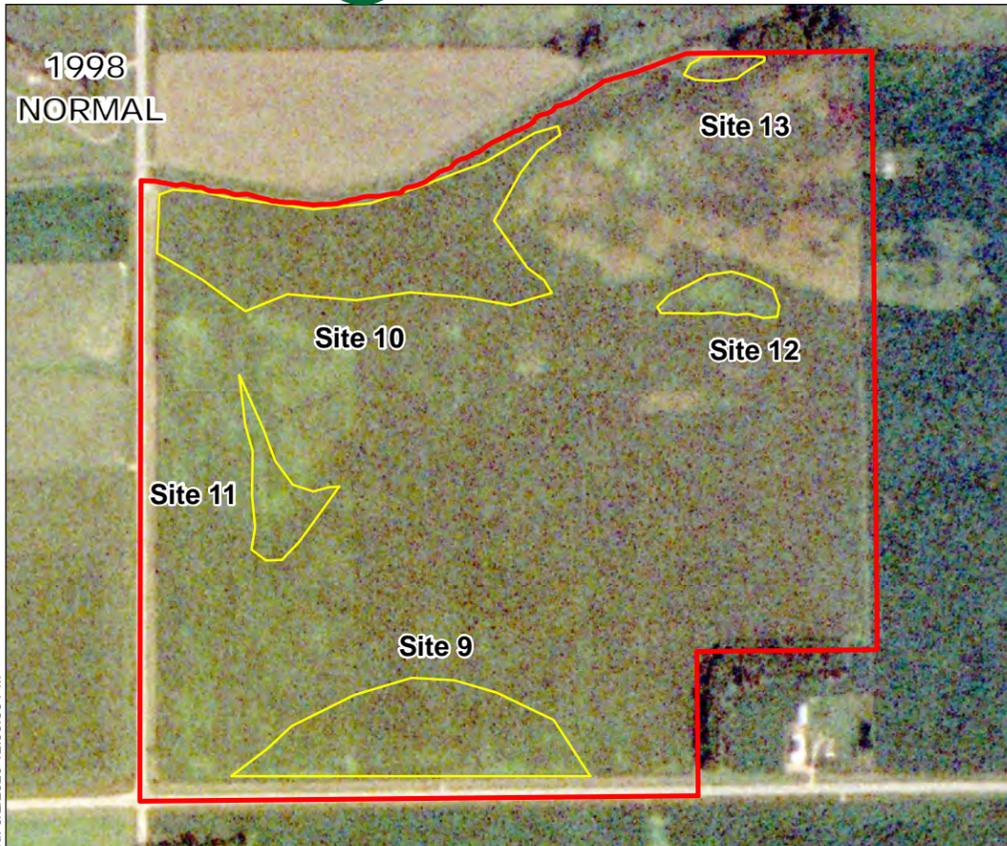




0 650 Feet

Source: FSA

June 2020



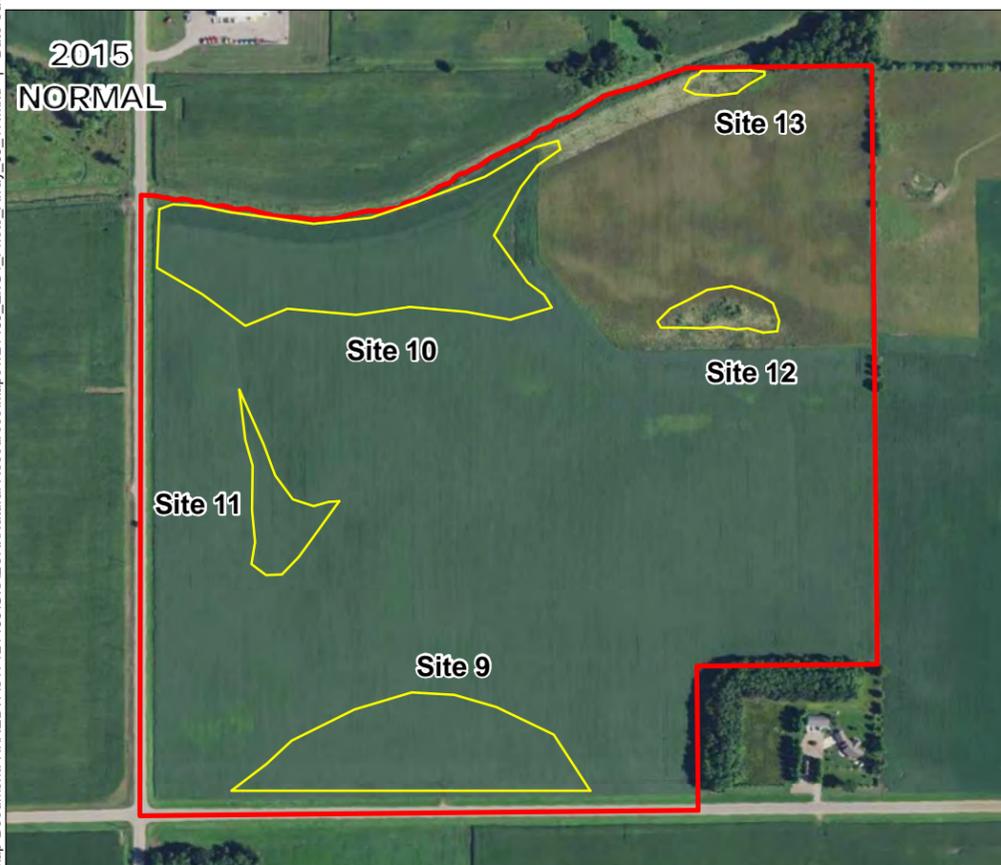
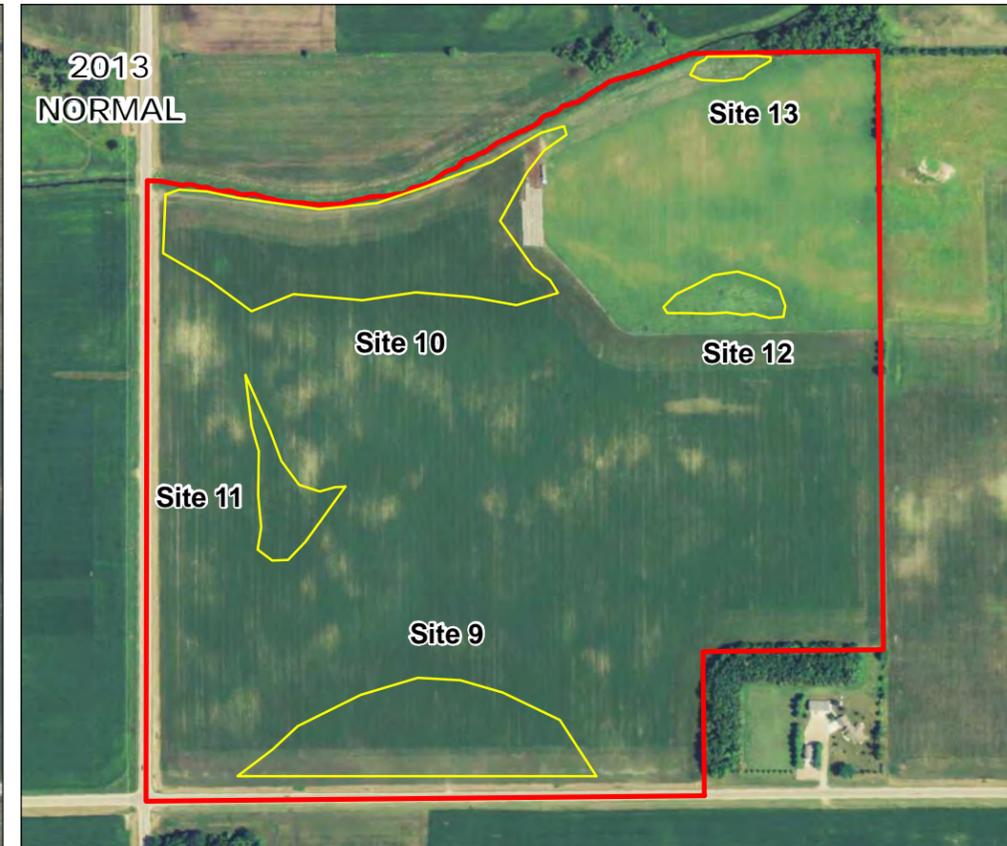
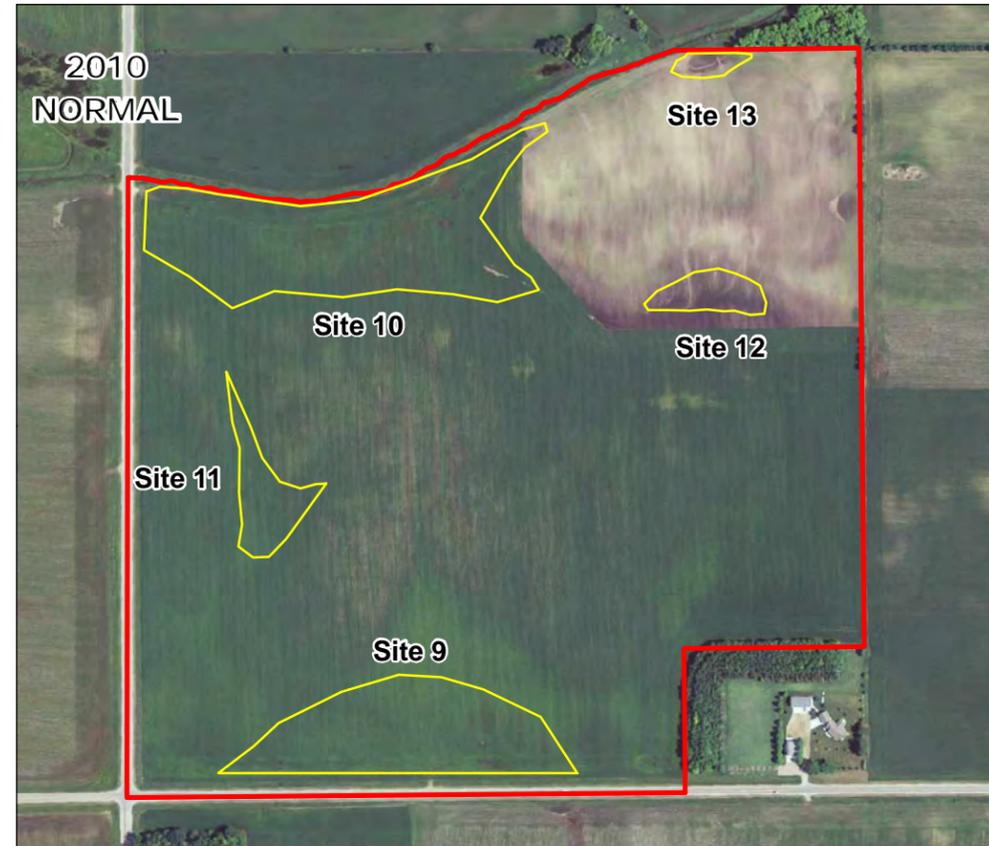
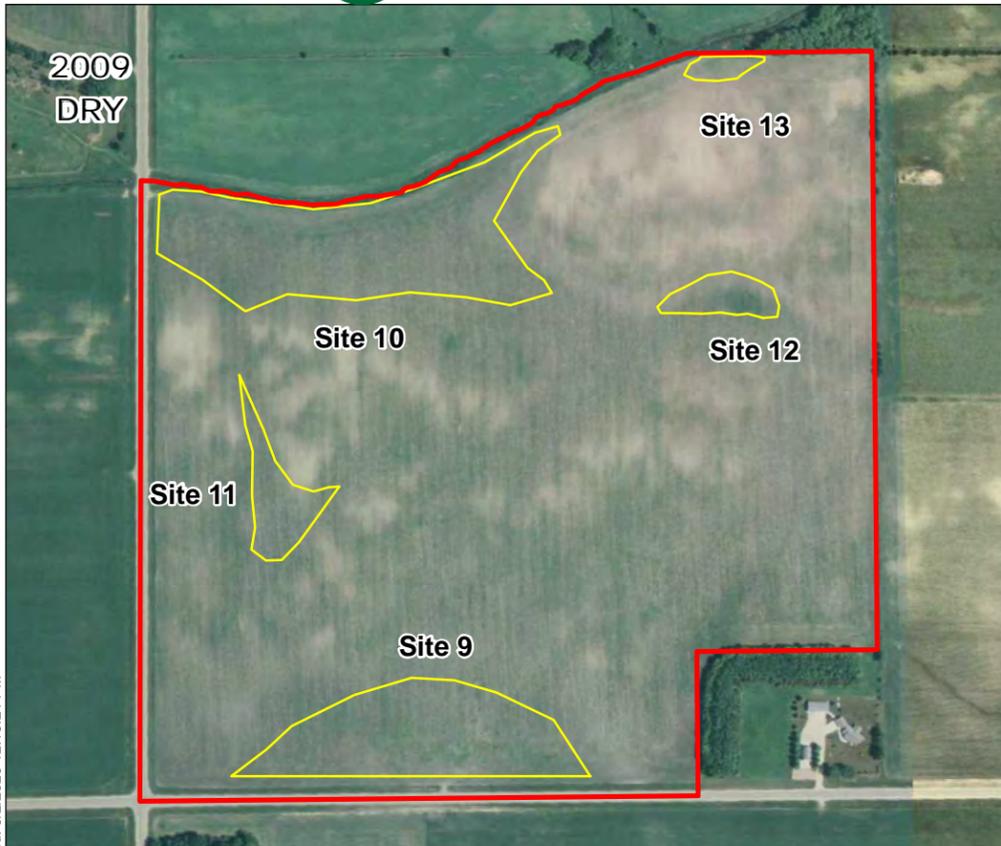
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0 650 Feet

Source: FSA

June 2020

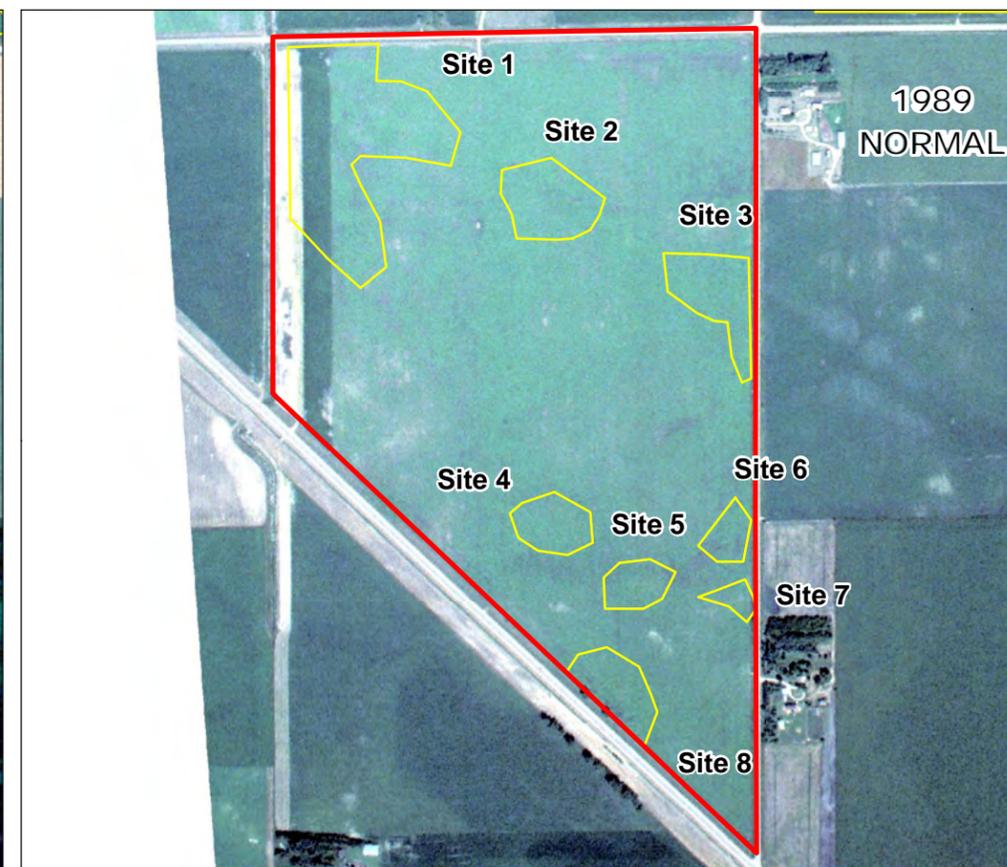
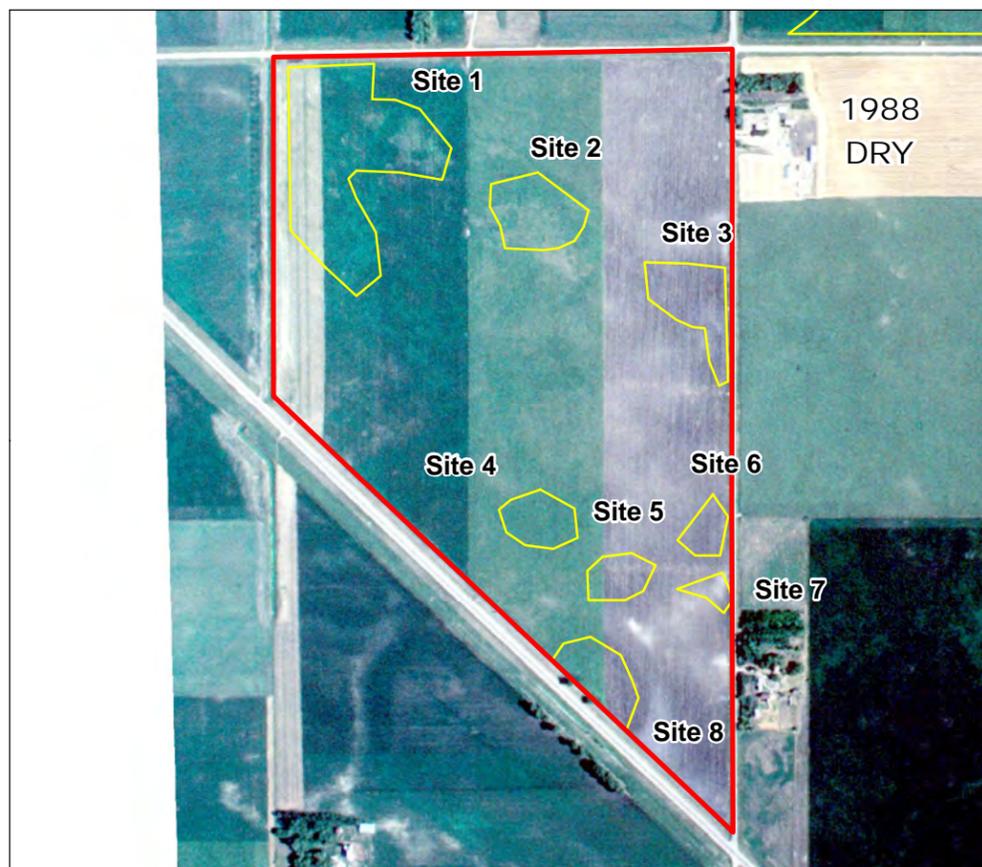
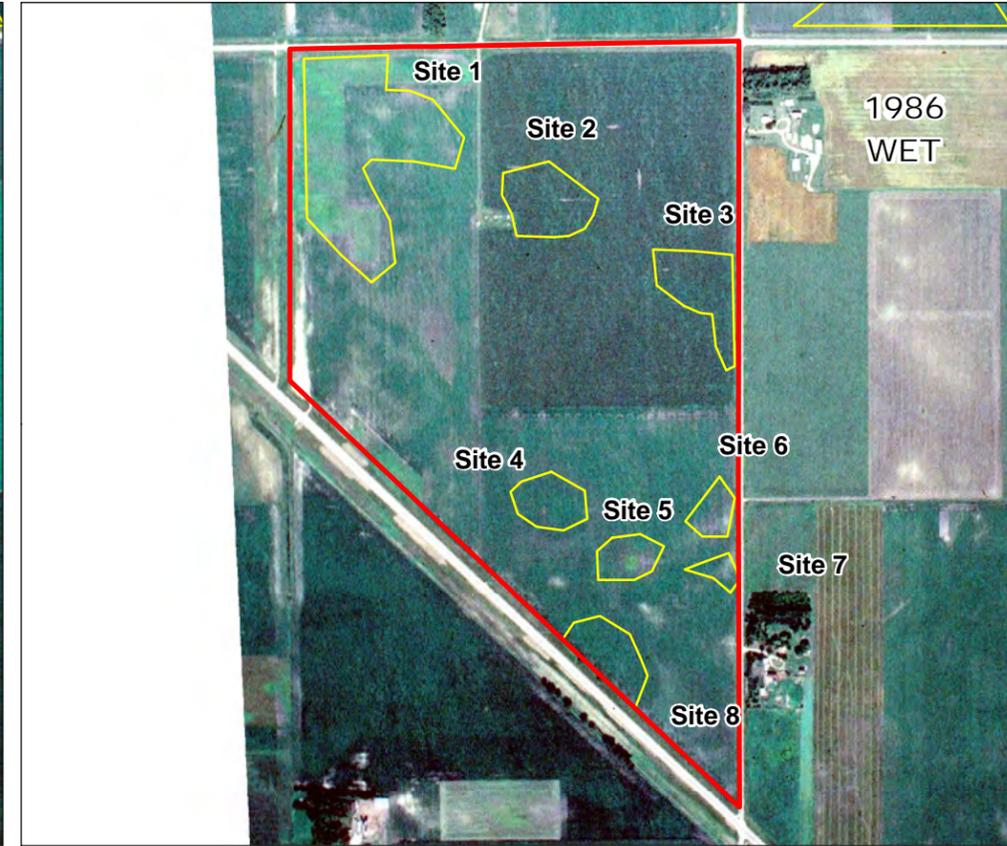
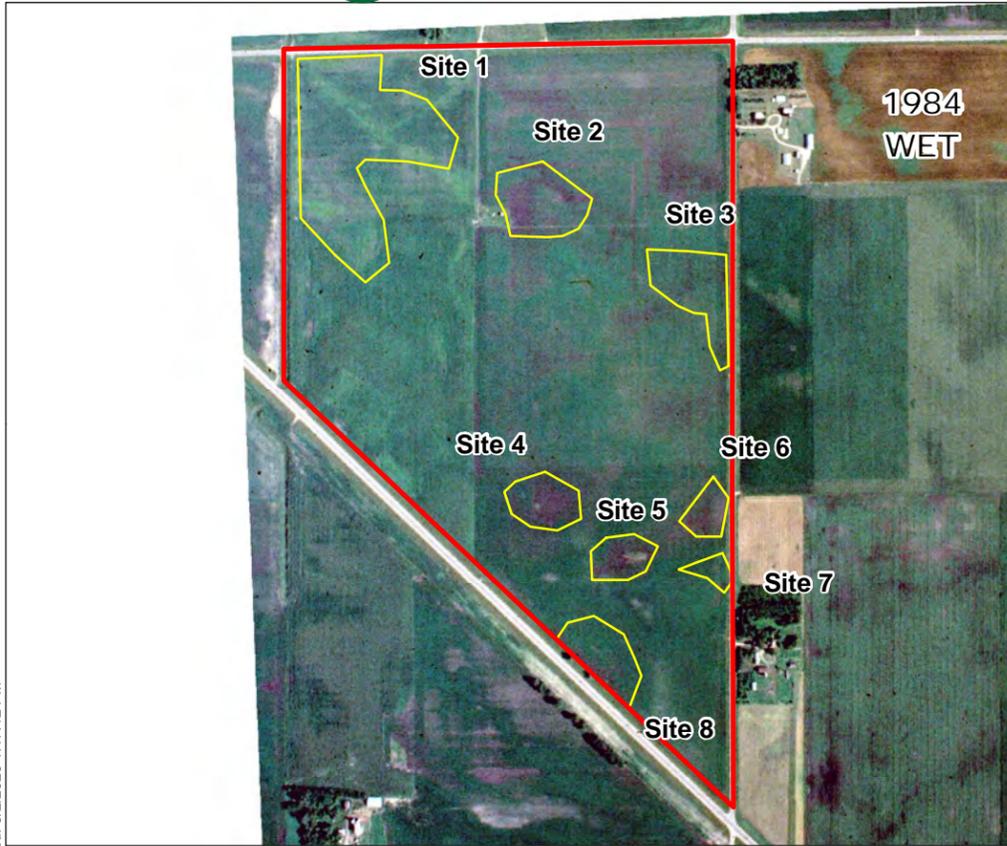




0 1,000 Feet

Source: FSA

June 2020



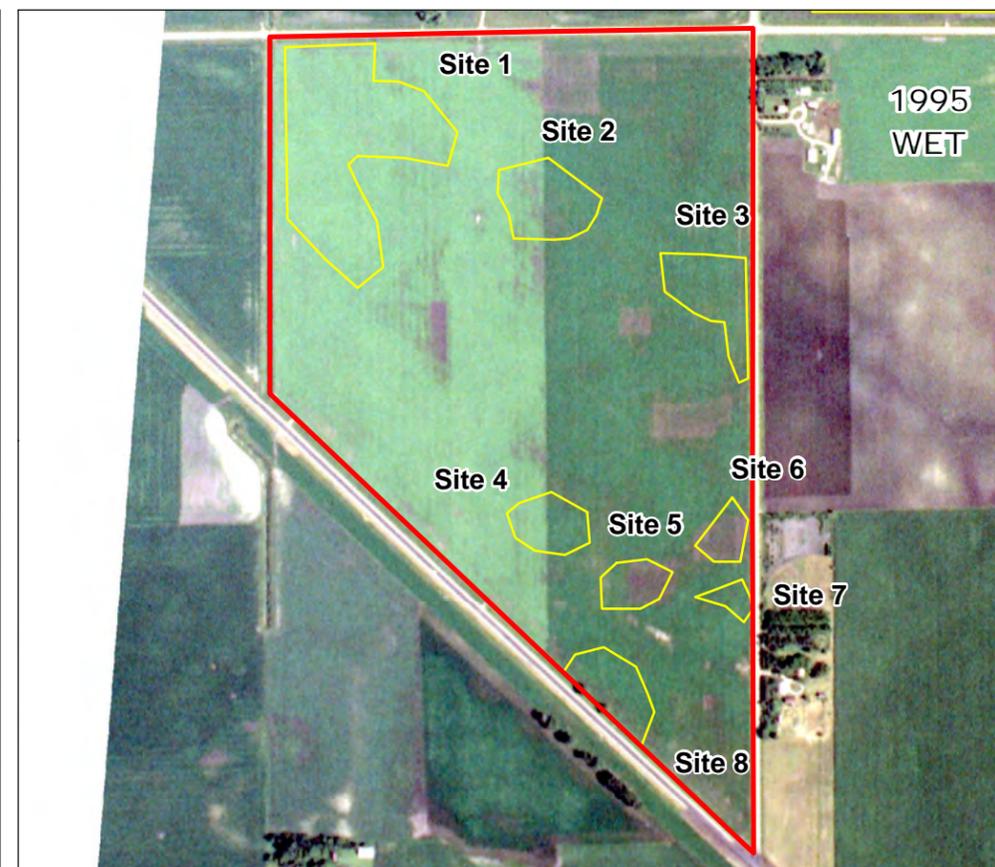
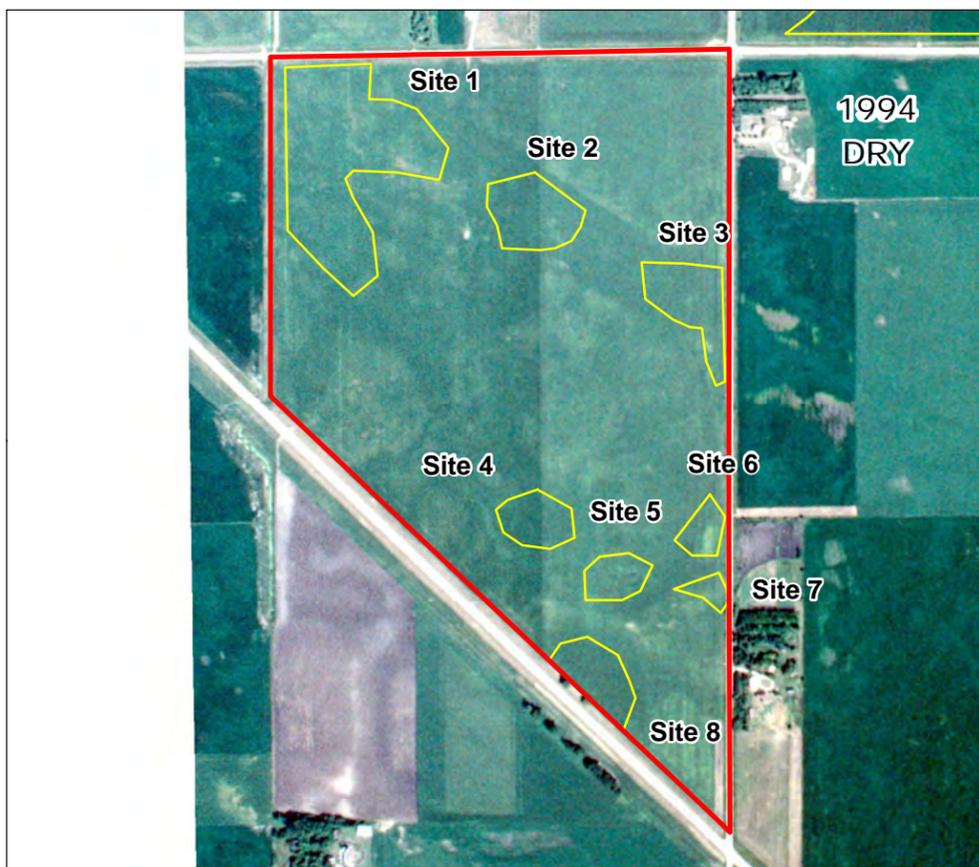
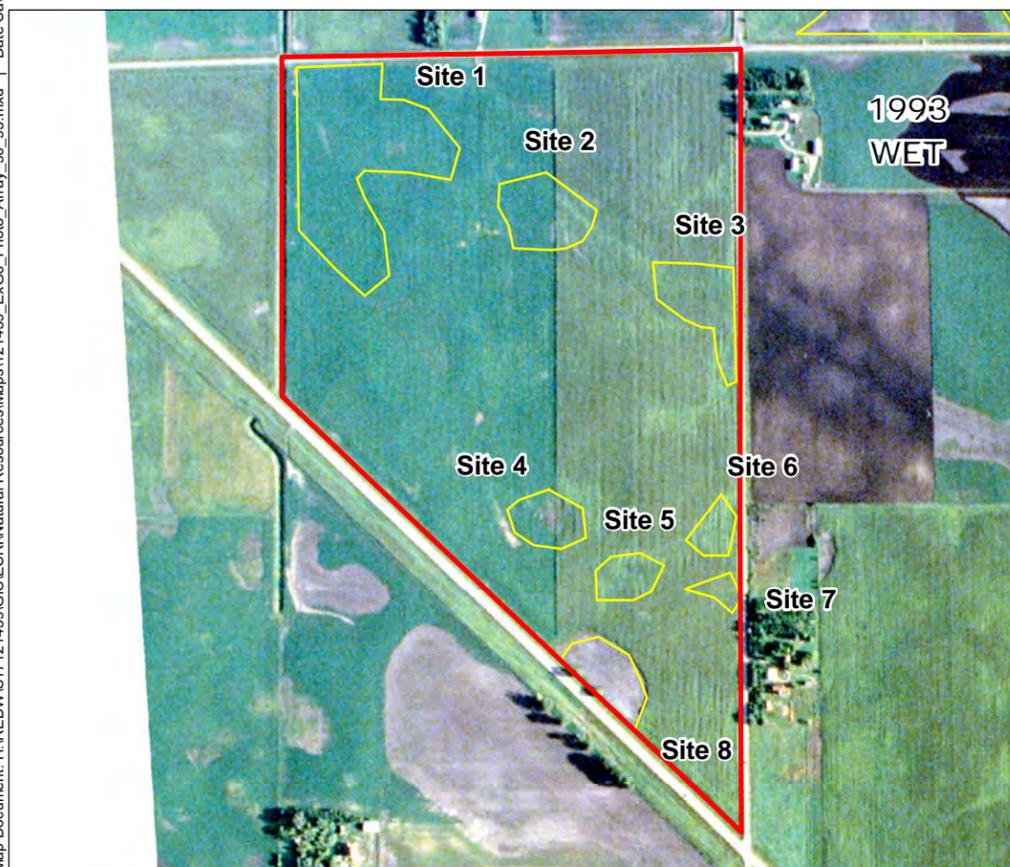
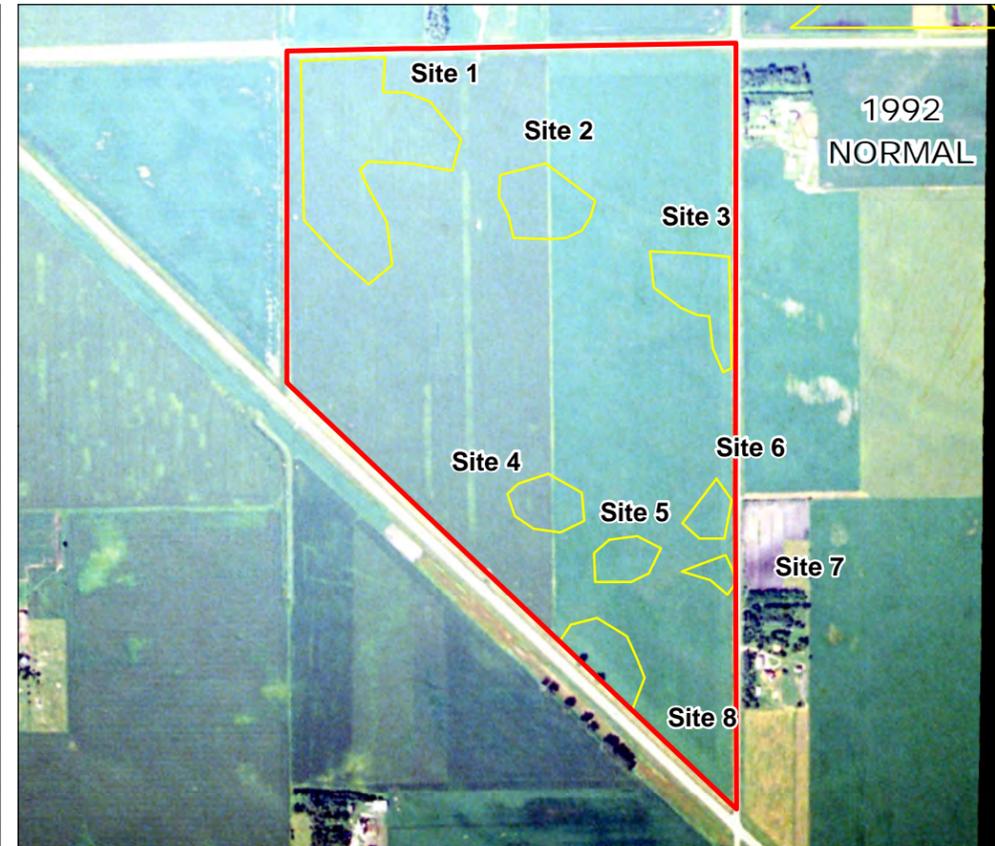
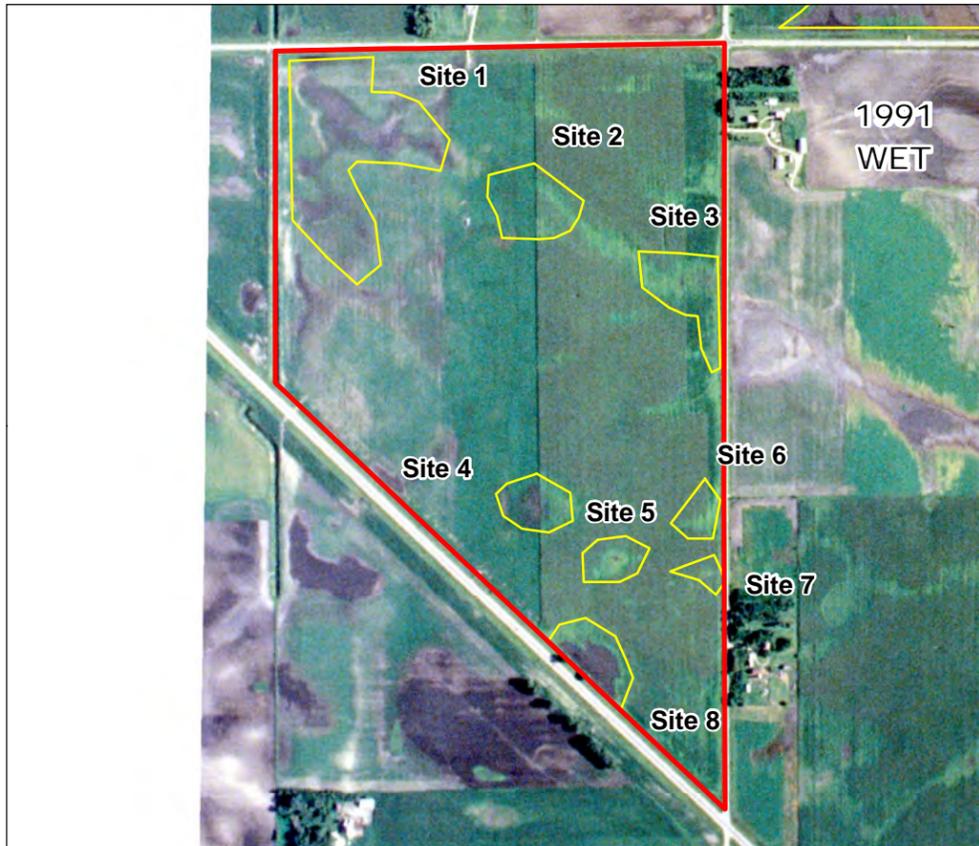
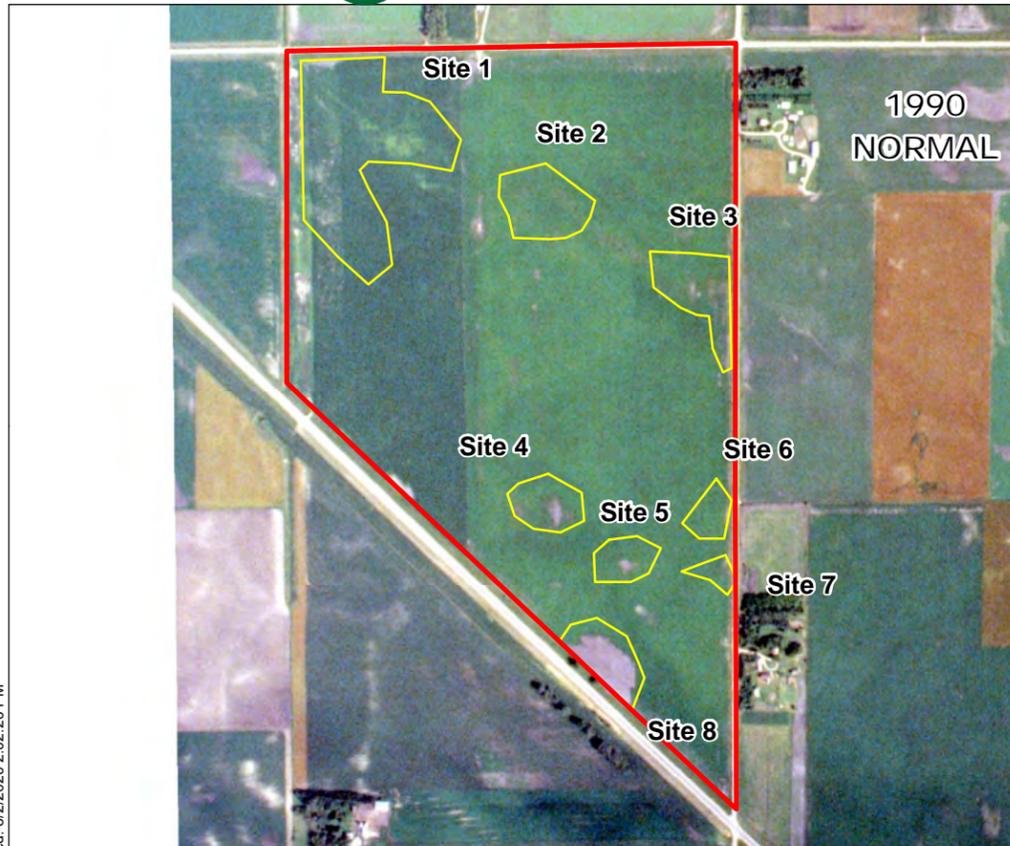


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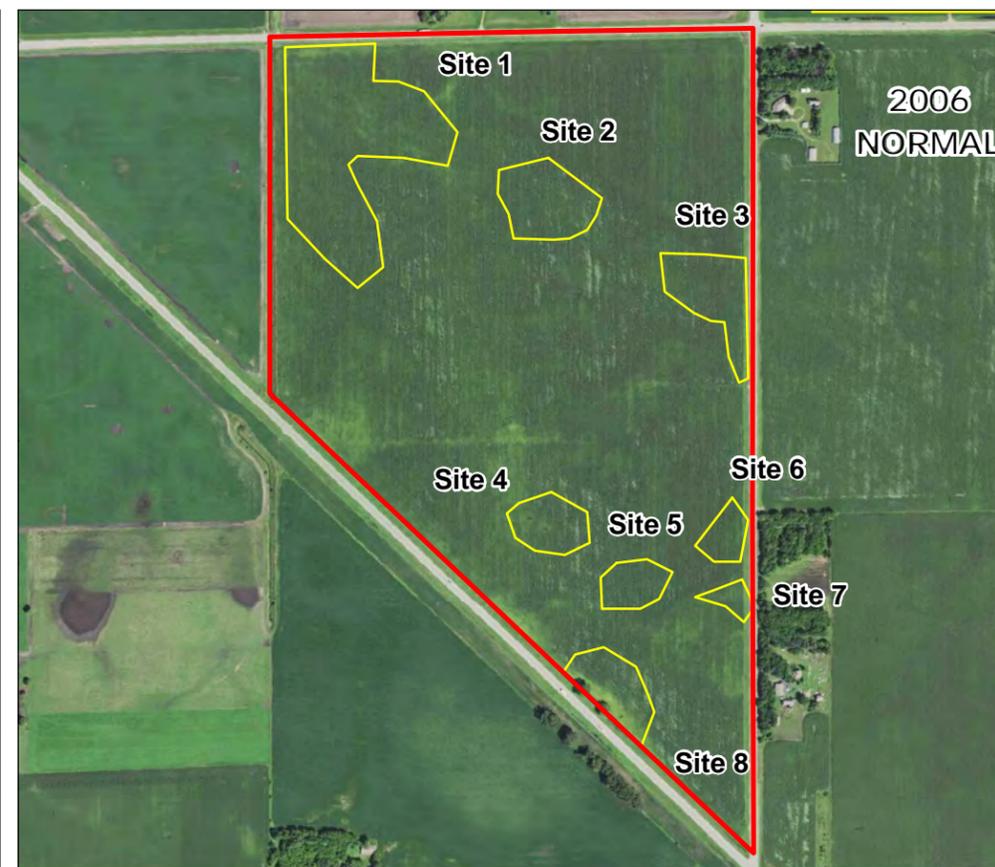
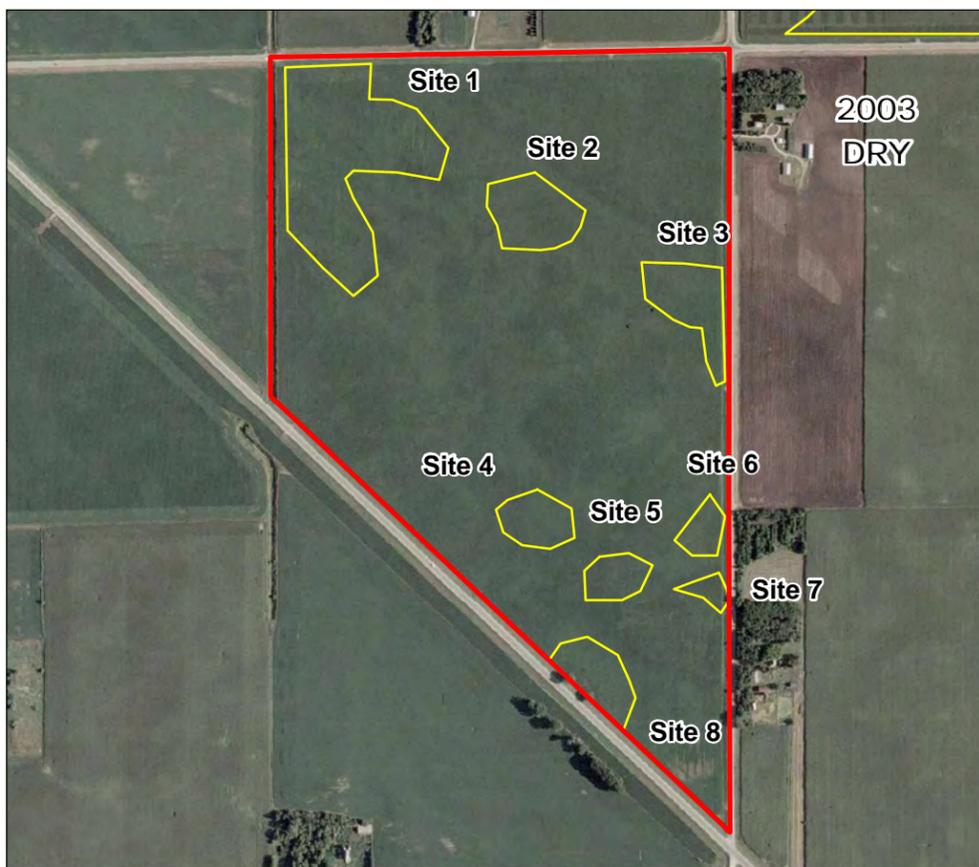
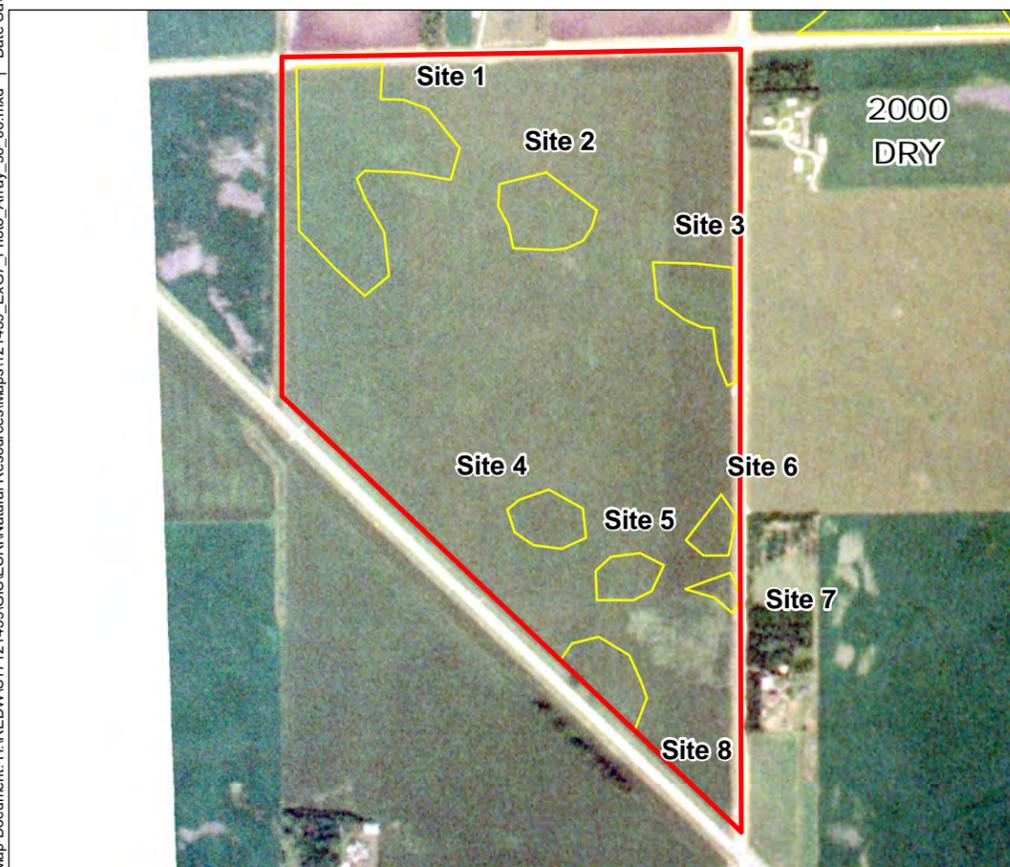
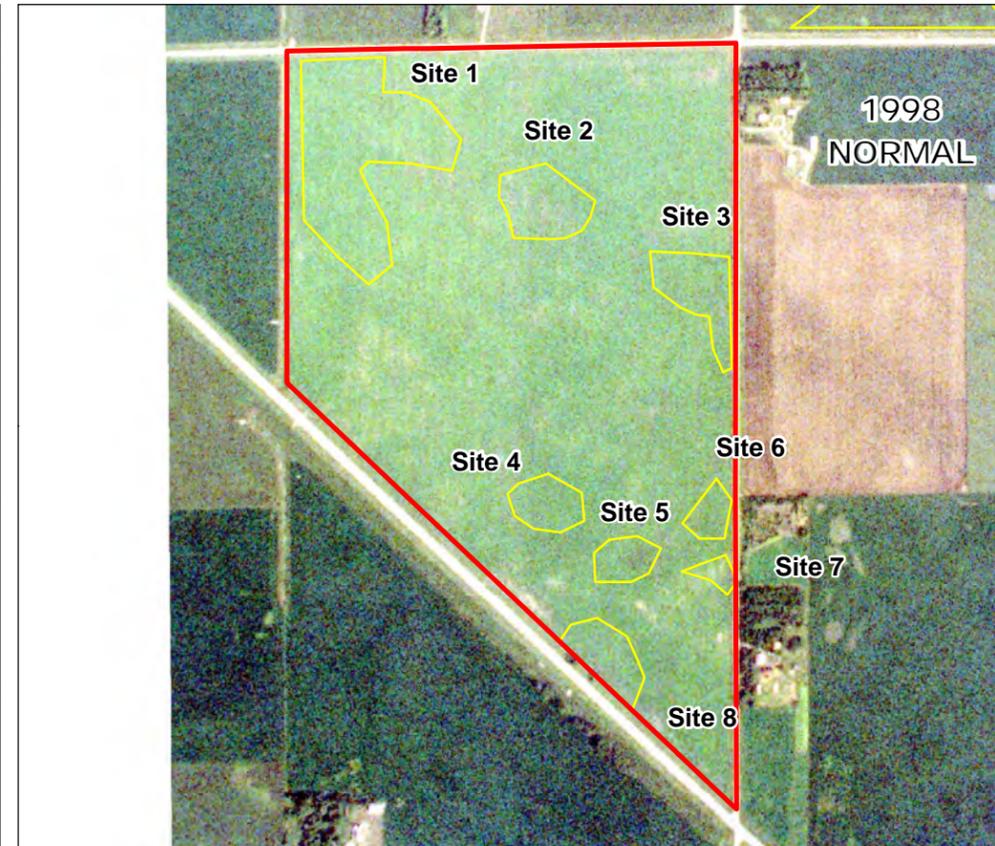
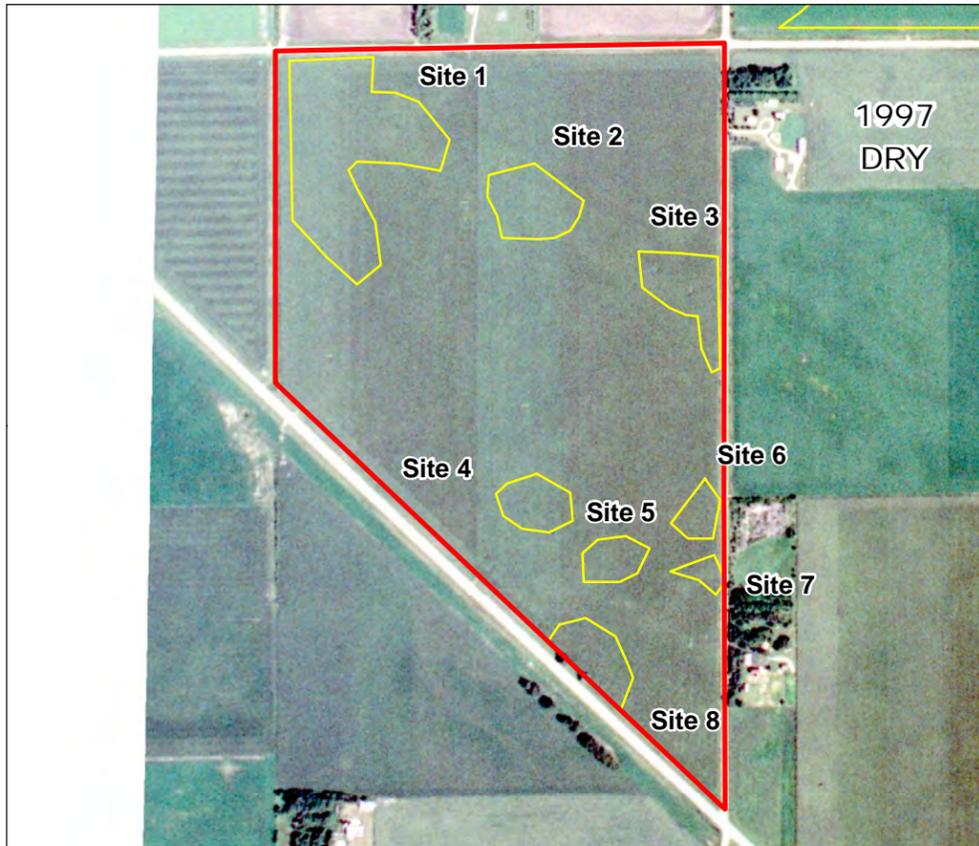
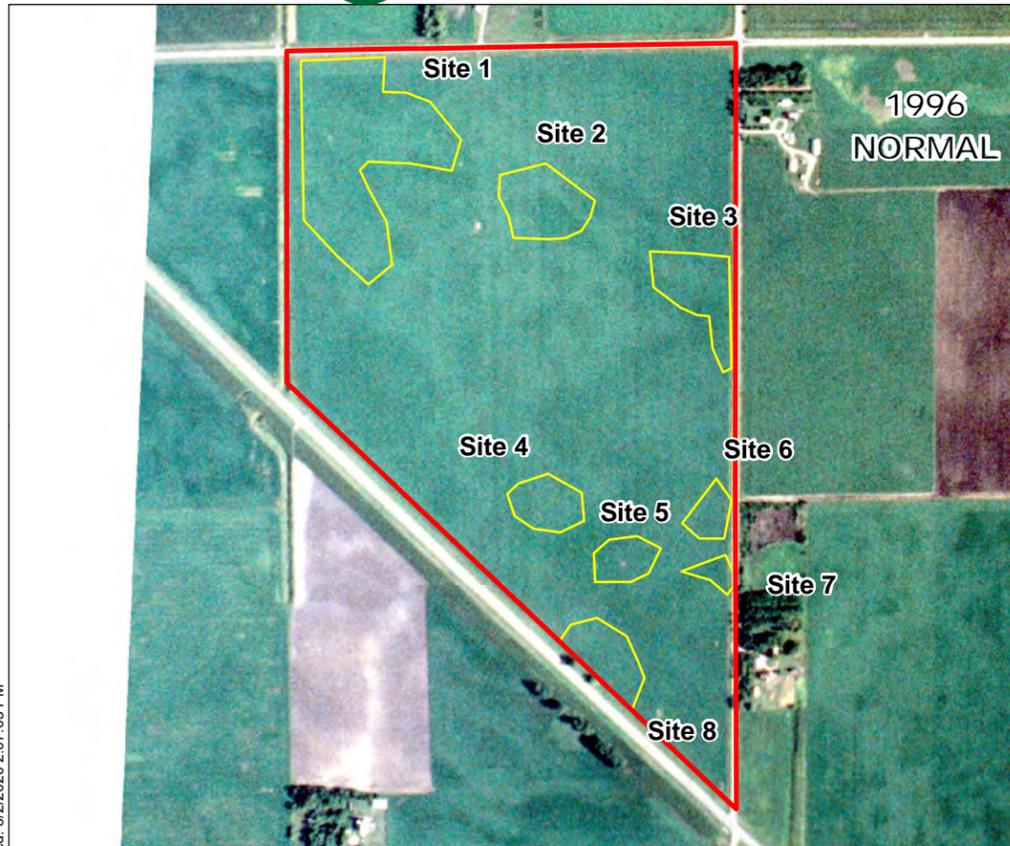


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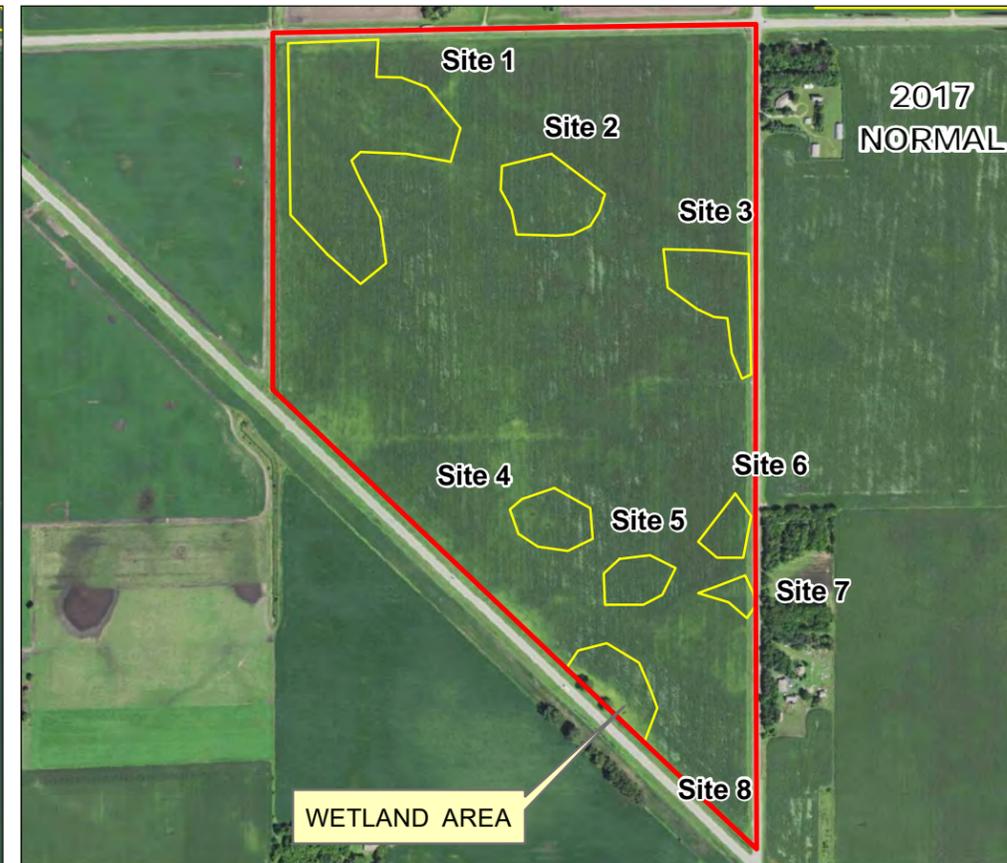
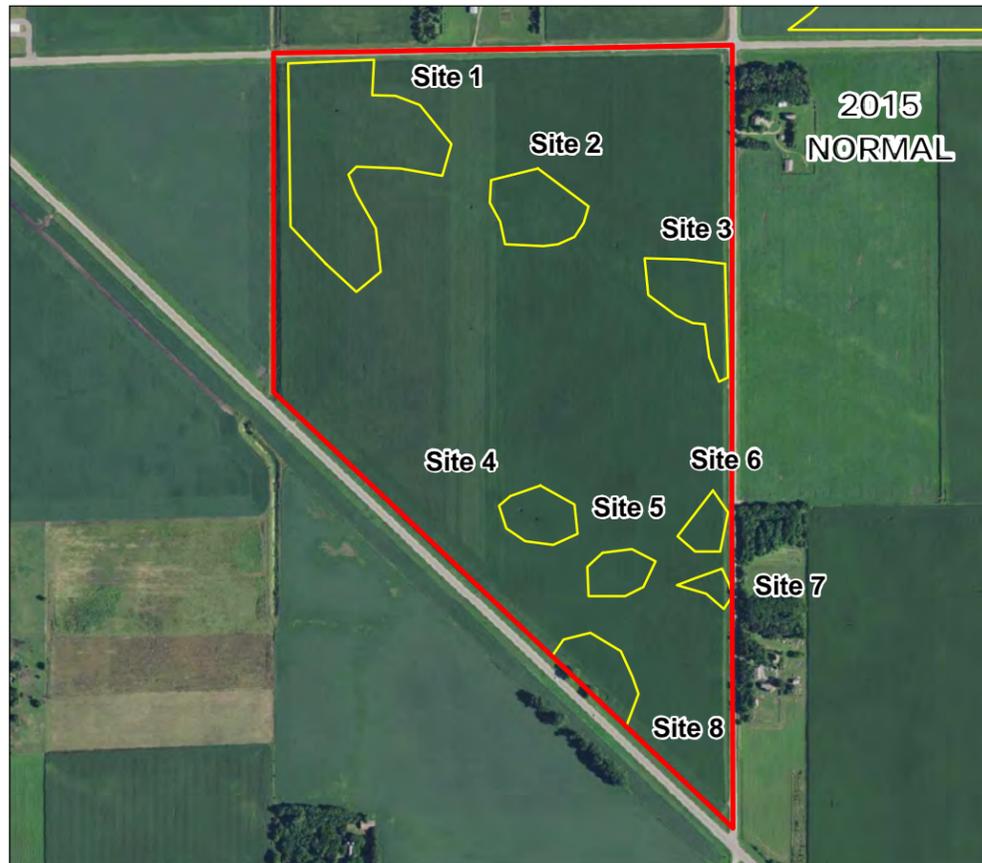
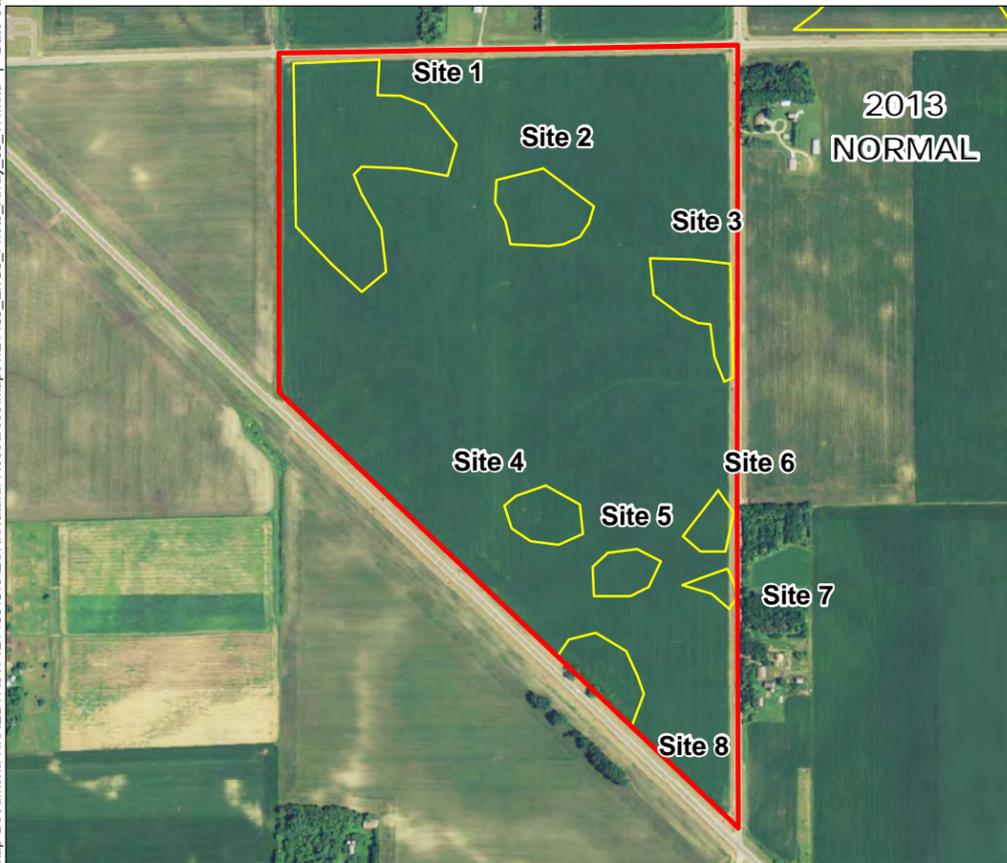
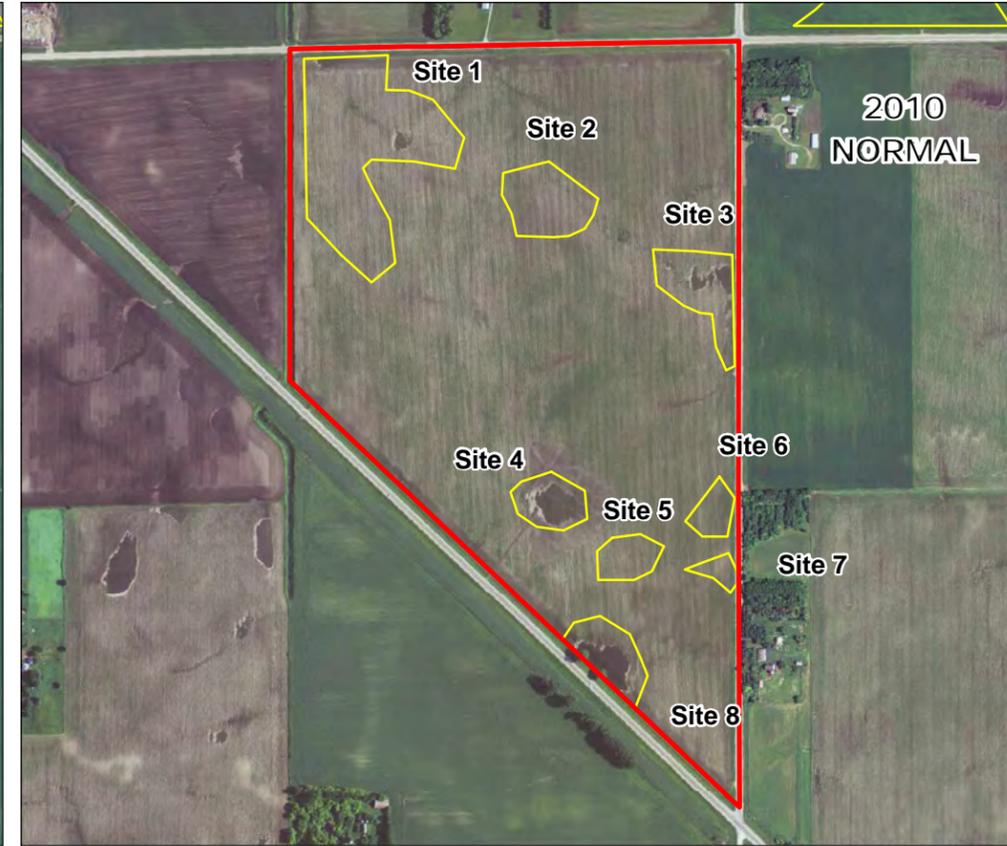
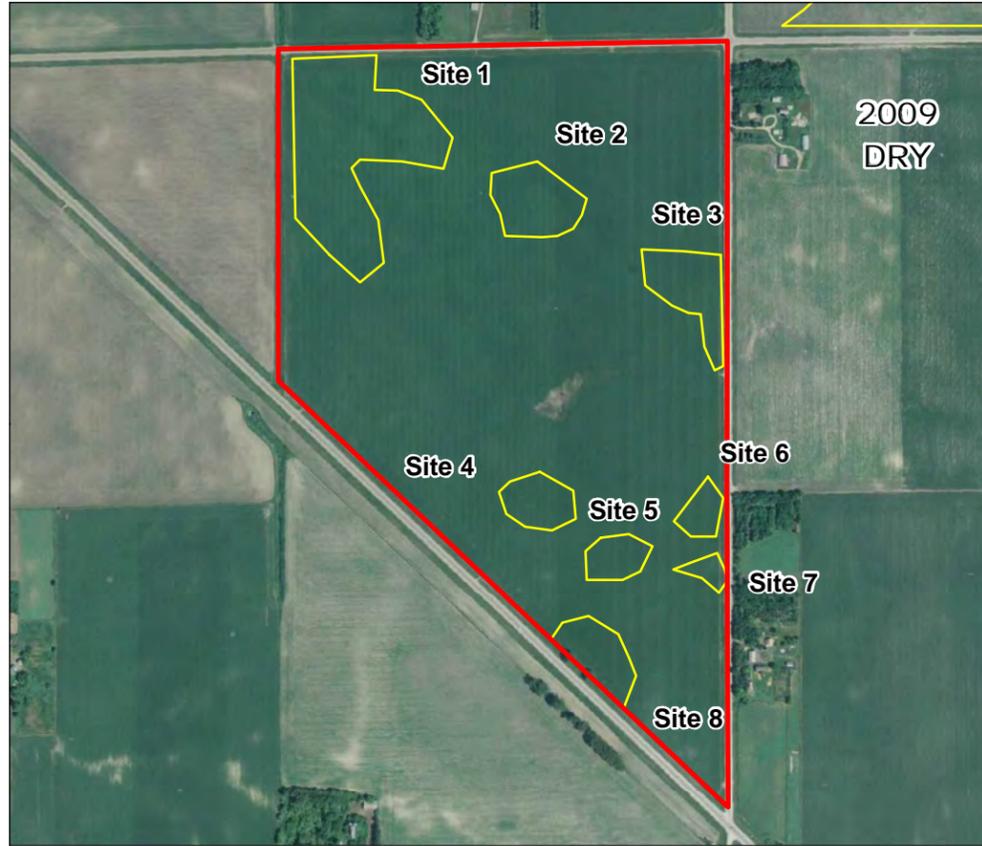
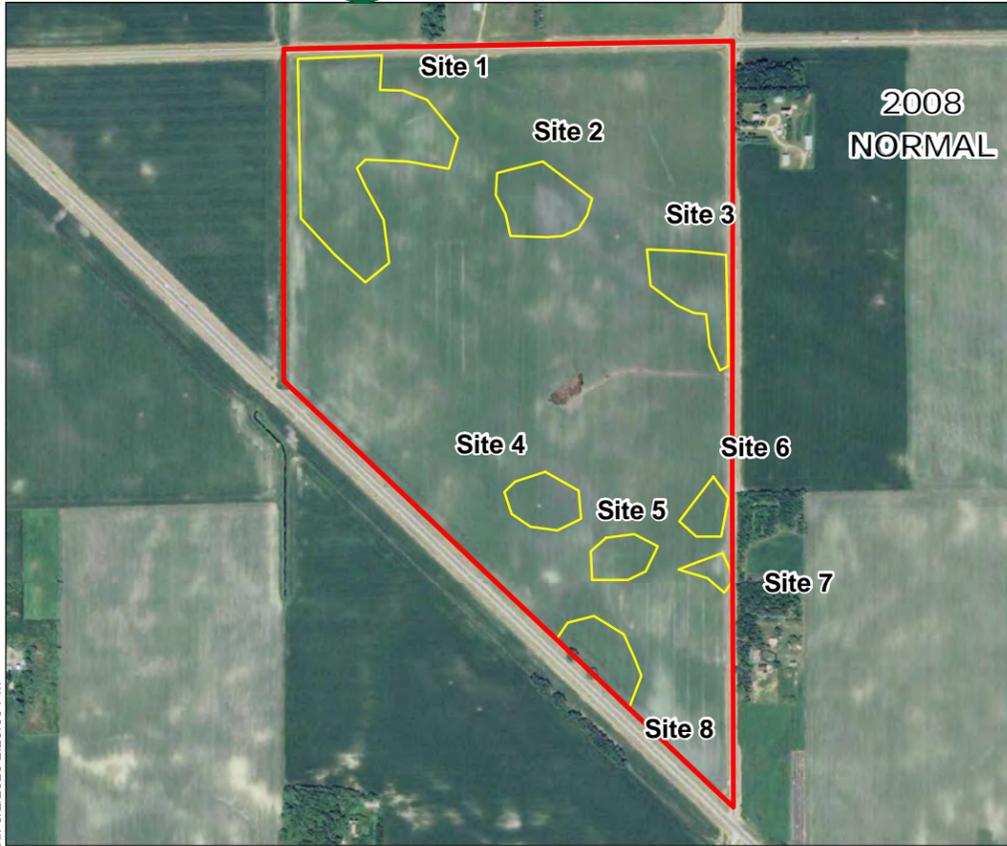




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MEMORANDUM

Date: May 12, 2021

To: Keith Muetzel, City Administrator, City of Redwood Falls
507-616-7400
kmuetzel@ci.redwood-falls.mn.us

From: Roberta Cronquist, P.E., C.F.M, Bolton & Menk, Inc.

CC: Owen Todd, P.E., Bolton & Menk, Inc.
Shaun Luker, P.E., Bolton & Menk, Inc.

Subject: Crow Creek (CD 52) Floodplain Evaluation and Floodway Determination
City of Redwood Calls, MN
Project No.: S17.121459

I. Introduction

The City of Redwood Falls is annexing and developing residential and commercial lots within the SE Development Study along Crow Creek (County Ditch 52). Developable properties located along the banks of Crow Creek may be in areas designated as a 100-year floodplain on the effective FEMA Flood Insurance Rate Map (FIRM) panels 27127C0162C and 27127C0170C, dated July 16, 2013. However, there is not a FEMA-defined floodway along this section of Crow Creek. Effective base flood elevations are provided in the Flood Insurance Study (FIS) report 27127CV000A dated July 16, 2013.

City and State Land Use ordinances require that prior to development within the floodplain, a Floodplain Evaluation be developed consistent with Minnesota state rules, to identify the location of the floodway and flood fringe [Redwood Falls Unified Ordinance 14.25(D)(3)].

This memorandum describes the development of a HEC-RAS hydraulic model reflecting updated community infrastructure information and discharge data, details the floodway delineation methodology and results, and defines an updated floodplain and a floodway for Crow Creek in Redwood Falls.

II. Floodway Definition

Floodplains are defined as the land adjacent to lakes and rivers that are covered by the 100-year flood, which is considered to have a 1 percent chance of occurring in a given year. Within the 100-year floodplain is the floodway and flood fringe. The floodway conveys the significant portion of flood waters and must remain undeveloped in order to pass flood waters downstream, while the flood fringe

includes areas within the floodplain outside the floodway.

A regulatory floodway is “area reserved from encroachment (development) in order to discharge the base flood without cumulatively increasing the water surface elevation by more than a designated height” (FEMA, 2020). This allowable rise in water surface is also known as the allowable “Floodway Surcharge”. Minnesota restricts the allowable floodway surcharge to 0.5 ft (Minnesota Statute 6120.5700, 2020).

The Redwood Falls City Code also requires that new structures in or adjacent to the floodplain be elevated above the Regulatory Flood Protection Elevation, which is 1 foot above the determined base flood elevation.

Additionally, Minnesota requires a vegetated buffer along agricultural ditches and public natural channels. A 16.5-ft wide continuous buffer is required for public drainage systems, whereas a 30-ft minimum and 50-ft average width is required for natural riparian corridors (Minnesota Statutes 103F.48, 2020). Buffer requirements should be considered along with floodway limits in identifying developable areas and appropriate land uses in the flood fringe.

III. Floodway and Floodplain Modeling

The floodplain and floodway for Crow Creek were mapped using HEC-RAS 5.0.7. The effective Zone AE floodplain model was unavailable from the MNDNR and the FEMA FIS indicated that the models were not available. Therefore, a HEC-RAS model was constructed using available data. The floodplain model incorporated more detailed and updated information from available construction plans, county ditch information, survey data, and field observations at major road crossings and channel cross sections. Flows in the effective model were unavailable in the FIS and StreamStats flows (Table 1) were used in this study. These data were incorporated into the HEC-RAS model and the ‘equal reduction in conveyance’ approach was used to evaluate floodway encroachments.

Table 1: Crow Creek Discharge Rates.

Return Period	Discharge (cfs)	
	Upstream of CD 20 Confluence	Downstream of CD 20 Confluence
1.5 YR	73.8	133
2 YR	113	204
5 YR	250	455
10 YR	375	684
25 YR	572	1040
50 YR	747	1360
100 YR	950	1740
500 YR	1510	2750

Invert elevations at road crossings were identified in 1997 bridge plans, BMI survey, and 2013 county

bridge plans from recent projects in Redwood Falls. Culvert dimensions were confirmed using BridgeInfo3 and corresponding bridge plans or survey. The following table describes upstream inverts, culvert dimensions, and data sources.

Table 2: Major road crossings and data sources for culverts (NAVD88).

Road or Crossing	Upstream Invert (ft)	Culvert Invert Source	Culvert Dimensions	Culvert Dimension Source
HWY 19	831.46	1997 Bridge Plans	88.2' Span	1997 Bridge Plans
Noble Ave/233	970.81	2013 Bridge Plans	16' x 14' RCB	2013 Bridge Plans
CSAH 1	994.63	BMI Survey	138" x 87" RCP	BridgeInfo3
CSAH 101	1003.1	BMI Plans 2019	16' x 9' RCB	BMI Plans 2019

All elevations from construction plans were adjusted to the NAVD 88 vertical datum. For Redwood County, the elevation conversion was assumed as NAVD 88 = NGVD 29 + 0.458 ft, the average conversion shown in Table 3 of the FIS.

To plan for future development consistent with the requirements of the Floodway determination, floodway encroachments reflecting equal conveyance reduction on both overbanks were identified. Floodway surcharge values at cross sections along Crow Creek within the model were limited to between 0.0 and 0.5 ft between Noble Ave. and just east of CSAH 101. City and agricultural regions upstream of CSAH 1 and the ditch channel downstream of Noble Ave. were not included in the floodway evaluation. Additional surveying or plan data for downstream bridge structures will be needed prior to evaluating a floodway determination for the lower section of Crow Creek.

IV. Results and Implications

Updated floodplain and floodway boundaries for Crow Creek and elevations are reflected on the attached exhibits. This resulting floodway elevation can be used by city staff to identify the Regulatory Flood Protection Elevation required for new construction by the Redwood Falls City Code, designated as 1 ft. above the floodway elevation. [14.11]. However, because the base flood elevations in the updated modeling are lower than the effective FEMA mapping, in order to adopt these newer flood elevations as the source for elevation requirements for future development, a LOMR will be required to update the FEMA FIRMs.

Because a floodway is not currently reflected on the effective FEMA floodplain maps, this floodway is currently considered an Administrative Floodway and can be incorporated into the Zoning regulations for the city and enforced by ordinance. However, if a LOMR is pursued for Crow Creek to update the floodplain elevations to reflect the updated values, the Floodway could be incorporated into that LOMR application.

The attached floodplain exhibits reflect both the FEMA effective floodplain as well as the updated

floodplain delineation and floodway for Crow Creek.

V. Allowable Floodplain and Floodway Uses

Allowable uses and criteria for conditional use variances are documented within the Redwood Falls Unified Ordinance Chapter 14. Generally, allowable uses include agricultural and forestry activities, lawns and greenspace, recreational trails, wildlife areas, and other uses which generally do not require significant structural development. These uses reflect the appropriate uses outlined in the FEMA Floodplain Guidance document. Chapter 14 of the city ordinance is shown in Appendix III.

VI. Certification

I hereby certify that this modeling and report was prepared by me or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

By: 

Roberta R. Cronquist, P.E.
License No. 52570, Exp. 06/2022

Date: May 12, 2021

VII. References

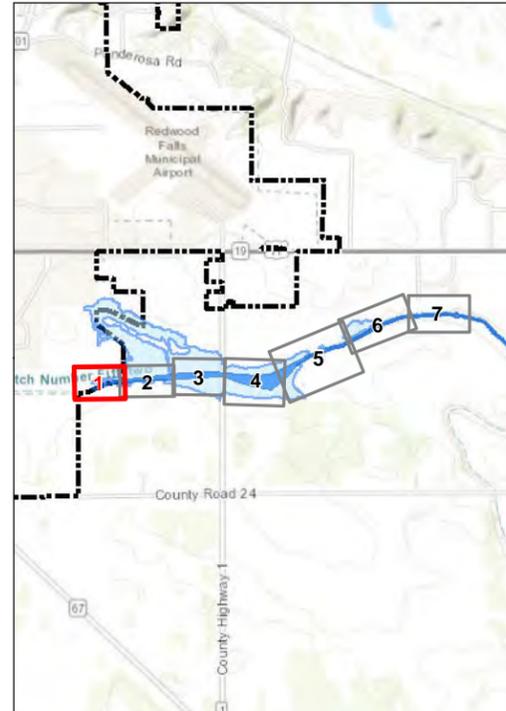
- FEMA, 2020. Guidance for Flood Risk Analysis and Mapping: Floodway Analysis and Mapping. https://www.fema.gov/sites/default/files/documents/fema_floodway-analysis-and-mapping.pdf
- Minnesota Statutes, 2020, section 103F.48, subdivision 3; MINN. STAT. 103F.48 (2020); MINN. STAT. ANN. 103F.48 (2020). <https://www.revisor.mn.gov/statutes/cite/103F.48>
- Minnesota Statutes, 2020, section 6120.5700, subdivision 4; MINN. STAT. 6120.5700 (2020); MINN. STAT. ANN. 6120.5700 (2020). <https://www.revisor.mn.gov/rules/6120.5700/>

Appendix I – Summary of Floodway Surcharges

HEC RAS Cross Section	FEMA Cross Section	Effective WSE (FIS) (ft)	100-year Floodplain WSE (ft)	100-year Floodway WSE (ft)	Surcharge (ft)
1016	M	1008.9	1008.71	1009.04	0.33
1015.8	---	---	1007.18	1007.63	0.45
1015.6	---	---	1006.91	1007.37	0.46
1015.5	---	---	1006.75	1007.24	0.49
CSAH 1					
1015.47	---	---	1002.96	1003.16	0.20
1015.41	---	---	1002.84	1002.95	0.12
1015.34	---	---	1002.71	1002.78	0.07
1015.29	---	---	1002.66	1002.71	0.05
1015.22	---	---	1002.56	1002.56	0.01
1015.17	---	---	1002.24	1002.24	0.00
1015.12	---	---	1001.88	1001.88	0.00
1015	L	1002.6	1001.22	1001.22	0.00
1014.9	---	---	1000.65	1000.65	0.00
1014.8	---	---	999.60	999.59	0.00
1014.7	---	---	997.14	997.14	0.00
1014.6	---	---	996.25	996.25	0.00
1014.56	---	---	995.96	995.96	0.00
1014.55	---	---	996.17	996.17	0.00
1014.5	---	---	995.92	995.92	0.00
1014.4	---	---	994.84	994.84	0.00
1014.3	---	---	993.76	993.76	0.00
1014.2	---	---	992.71	992.71	0.00
1014	K	991.7	991.67	991.67	0.00
1013.9	---	---	990.48	990.48	0.00
1013.7	---	---	989.25	989.25	0.00
1013.4	---	---	985.97	985.97	0.00
1013.2	---	---	984.42	984.42	0.00
1013	J	989.2	983.93	983.93	0.00
1012.9	---	---	983.57	983.57	0.00
Noble Ave					

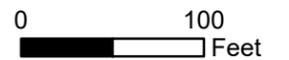
Appendix II – Crow Creek (CD 52)
Floodplain and Floodway Determination Exhibits

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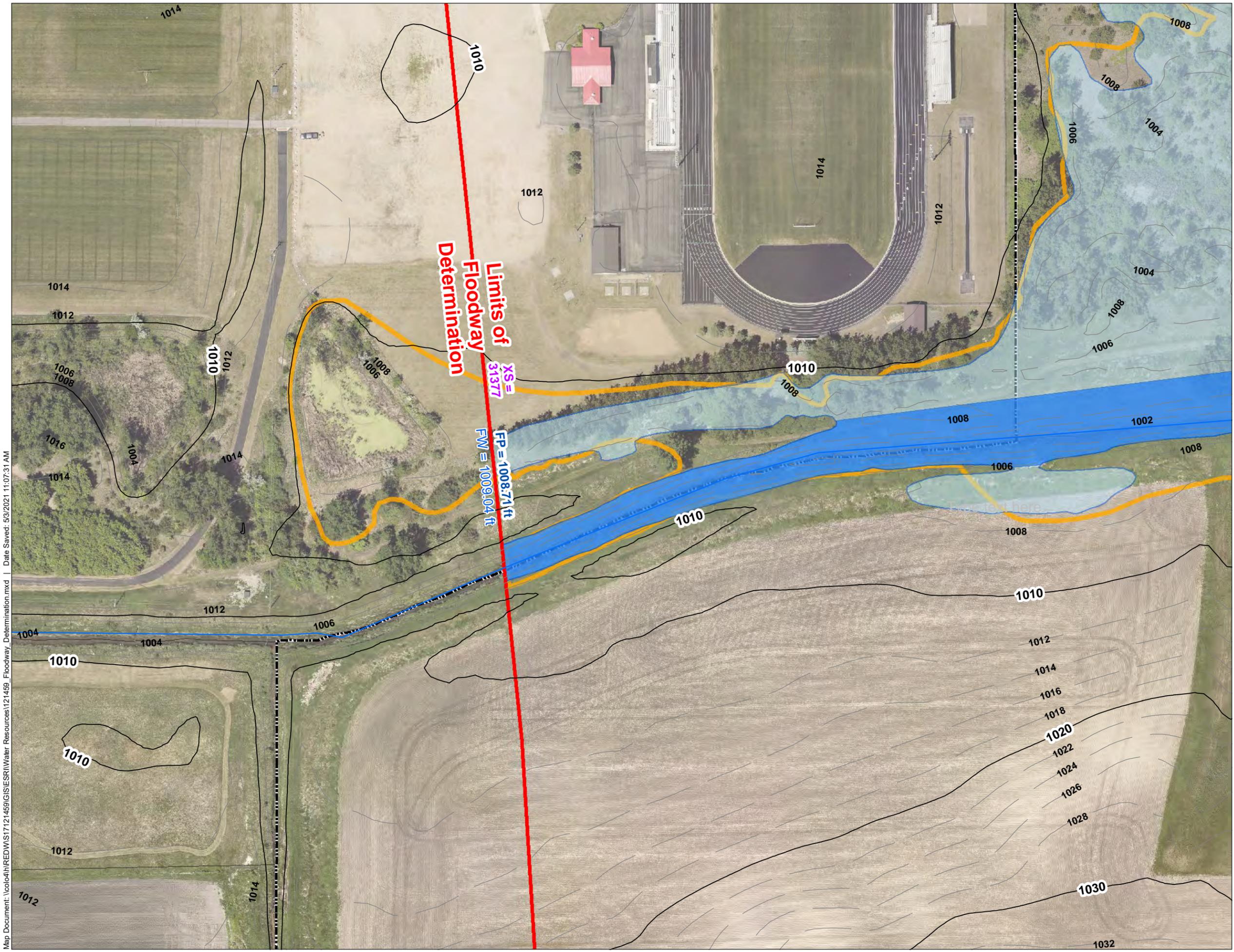


Legend

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- 2-ft Contour
- Culvert
- Cross Sections
- Floodway
- 100-year Floodplain
- Parcels
- Redwood Falls

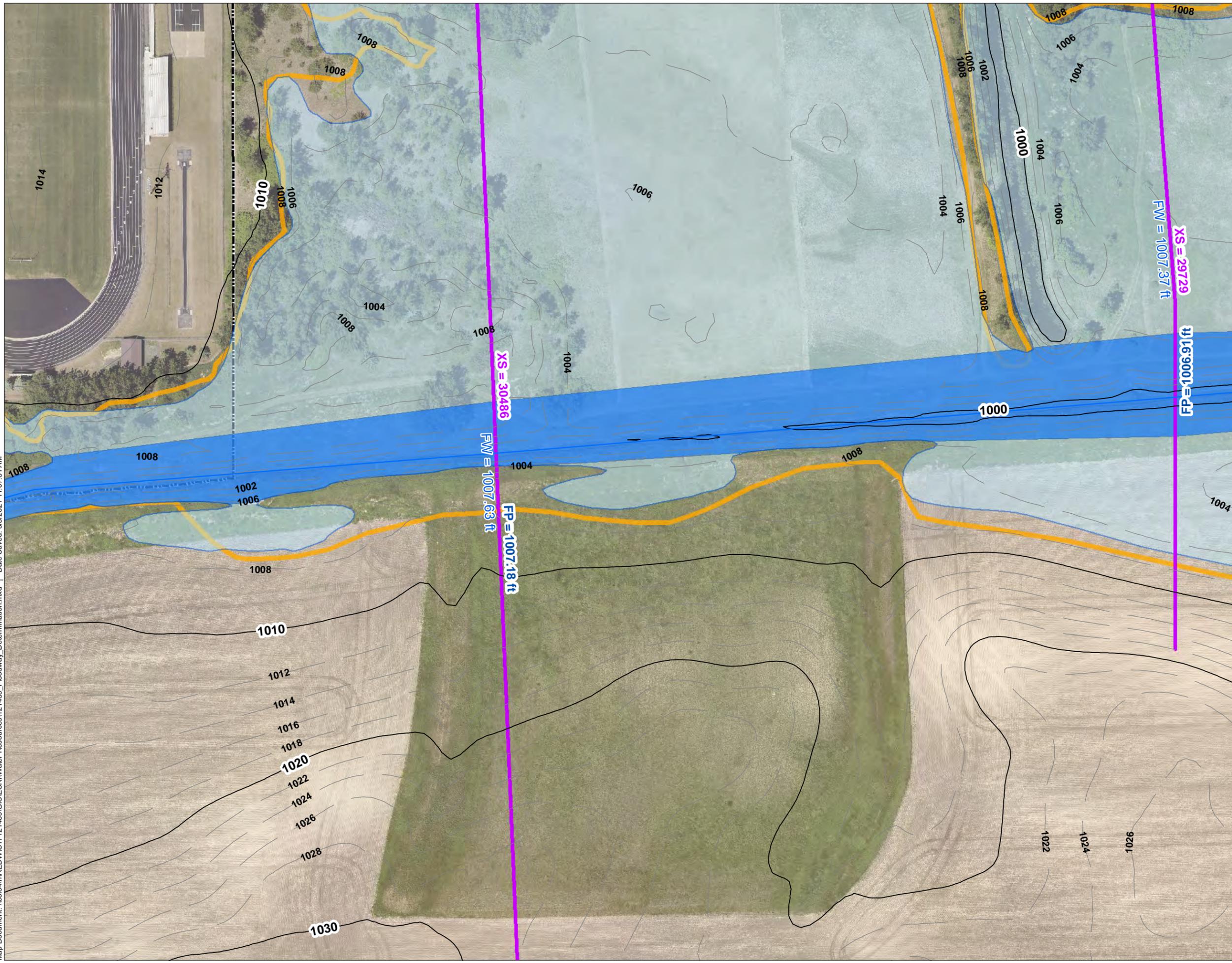
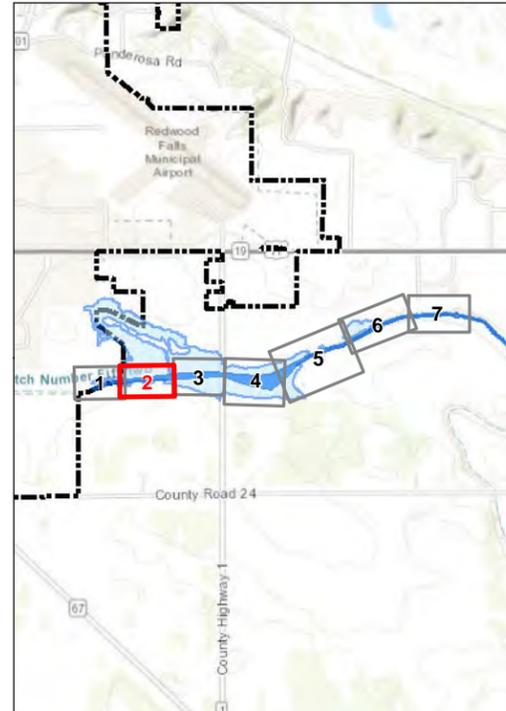


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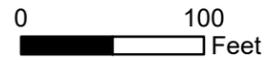
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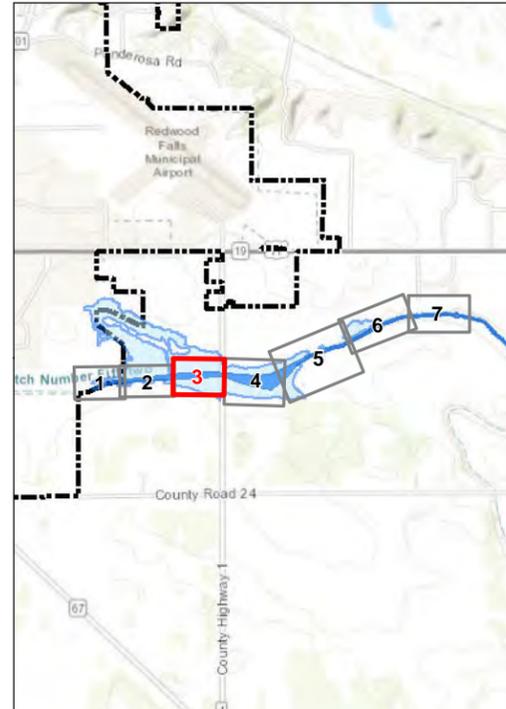
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- 100-year Floodplain
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Source: Redwood County, FEMA, MnDNR, MnDOT, Esri

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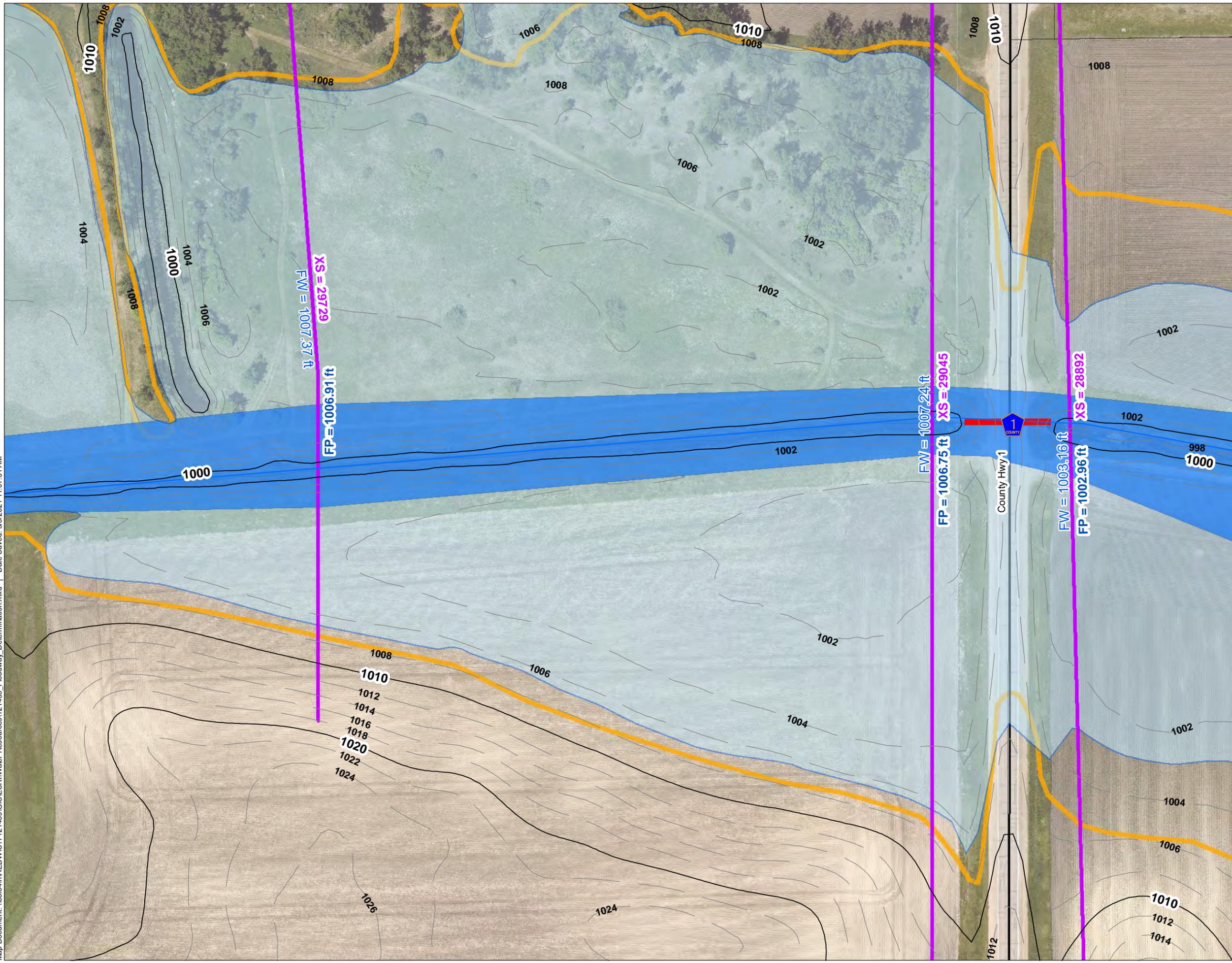
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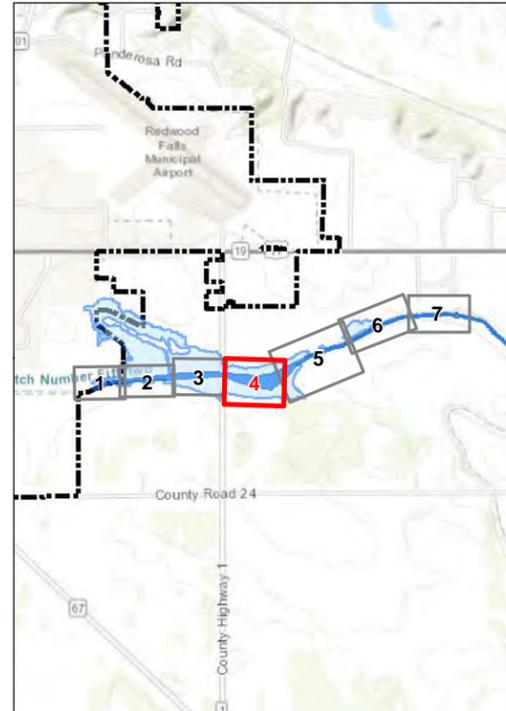
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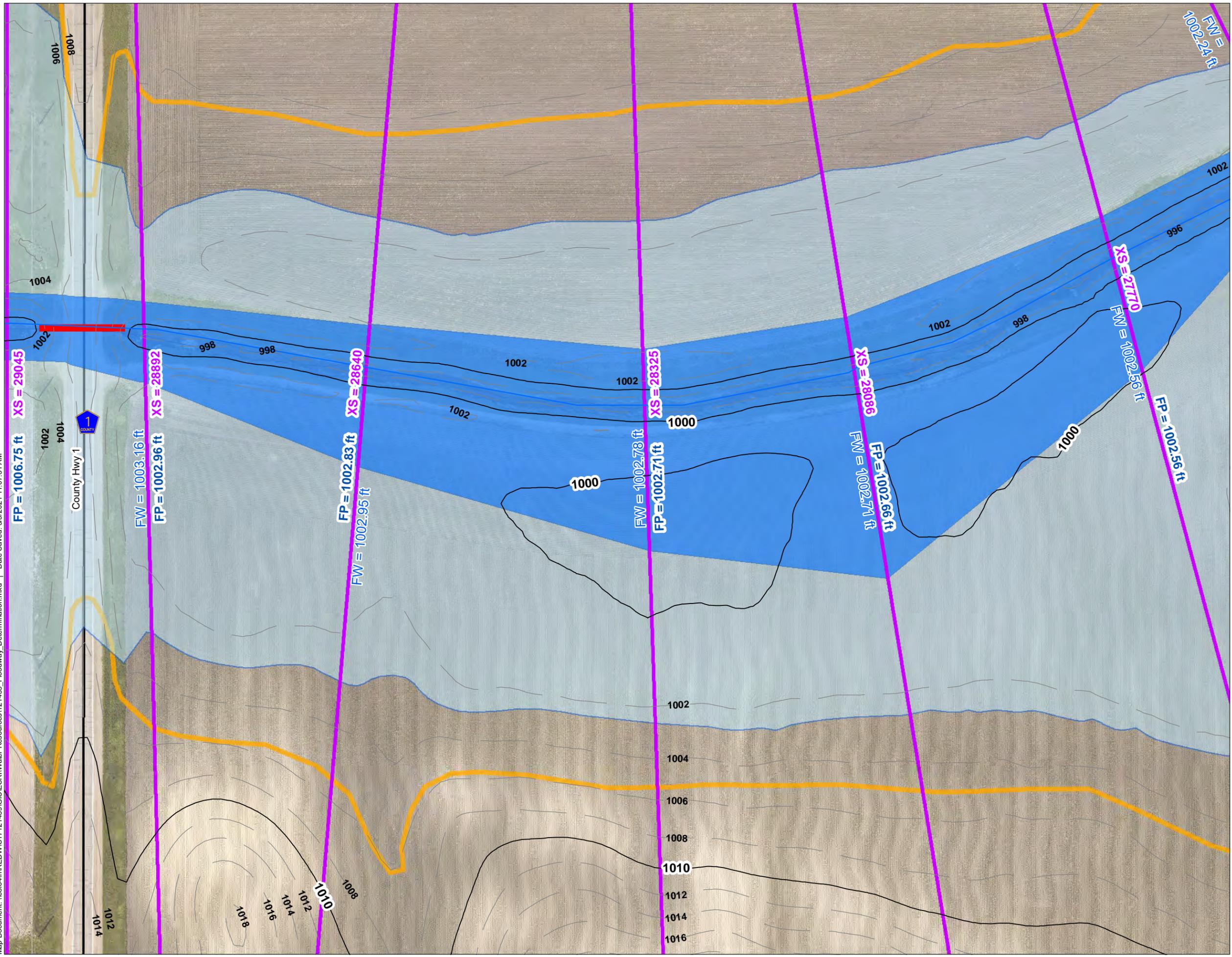
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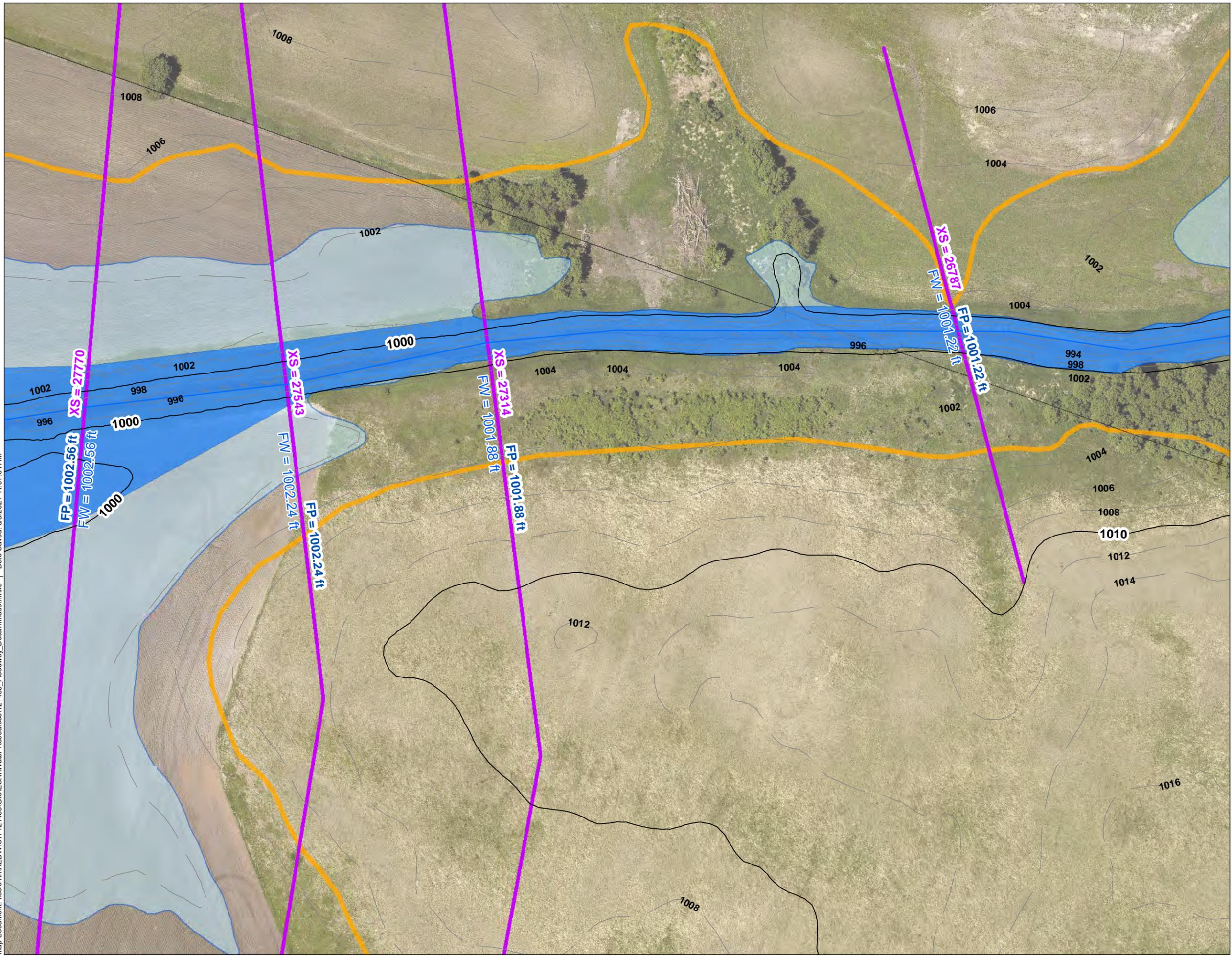
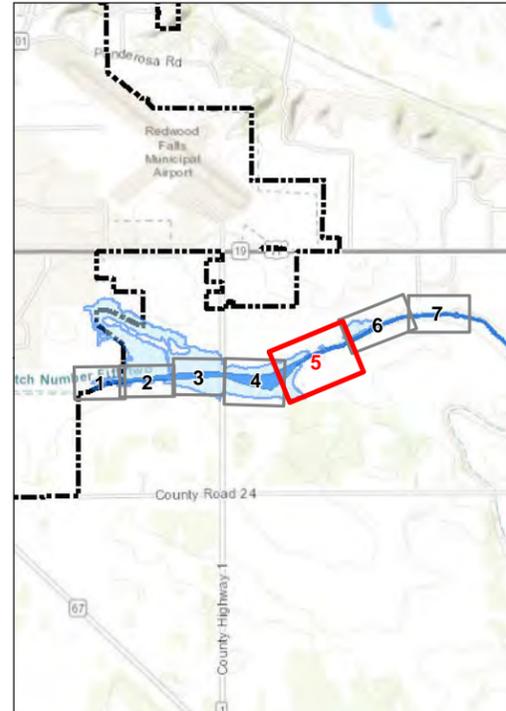
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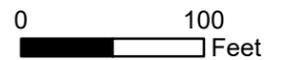


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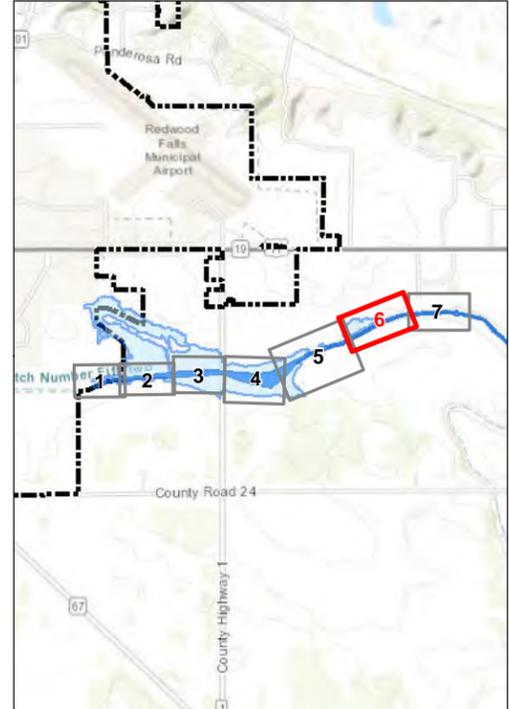
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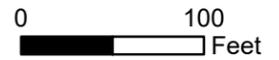
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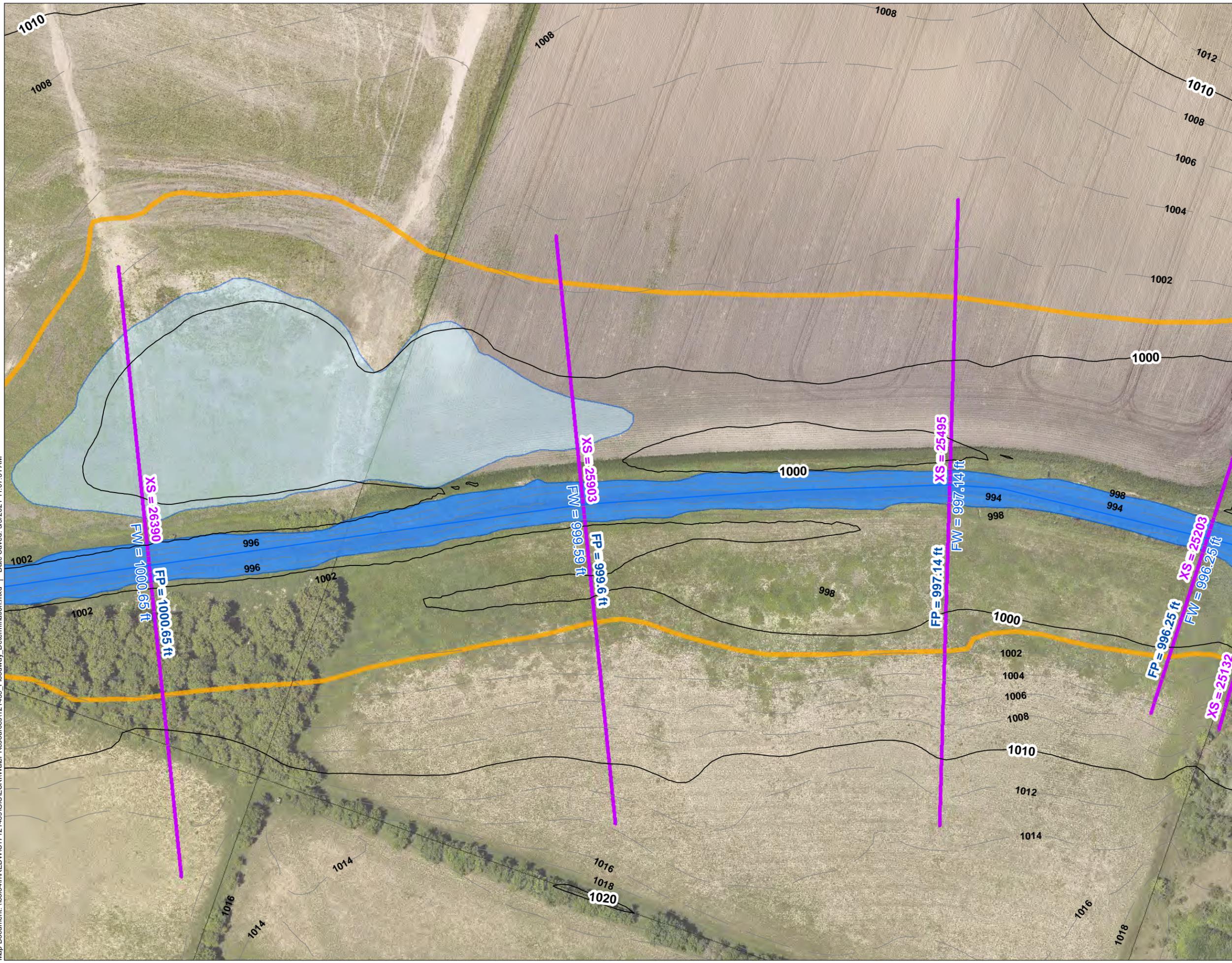
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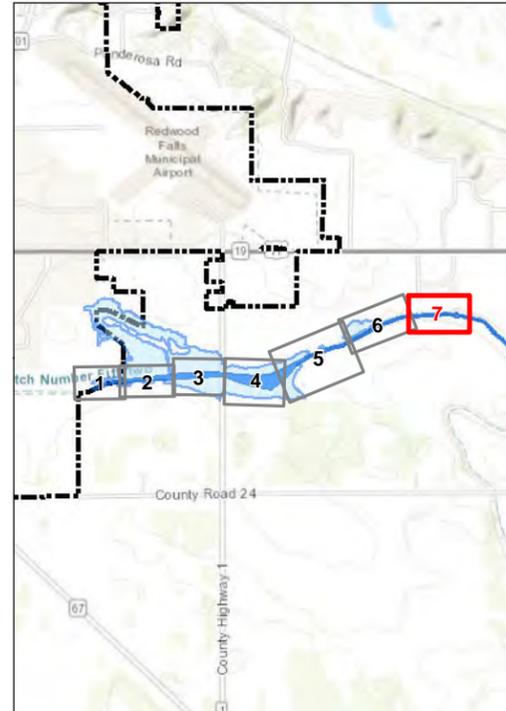


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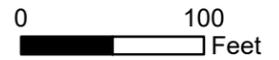


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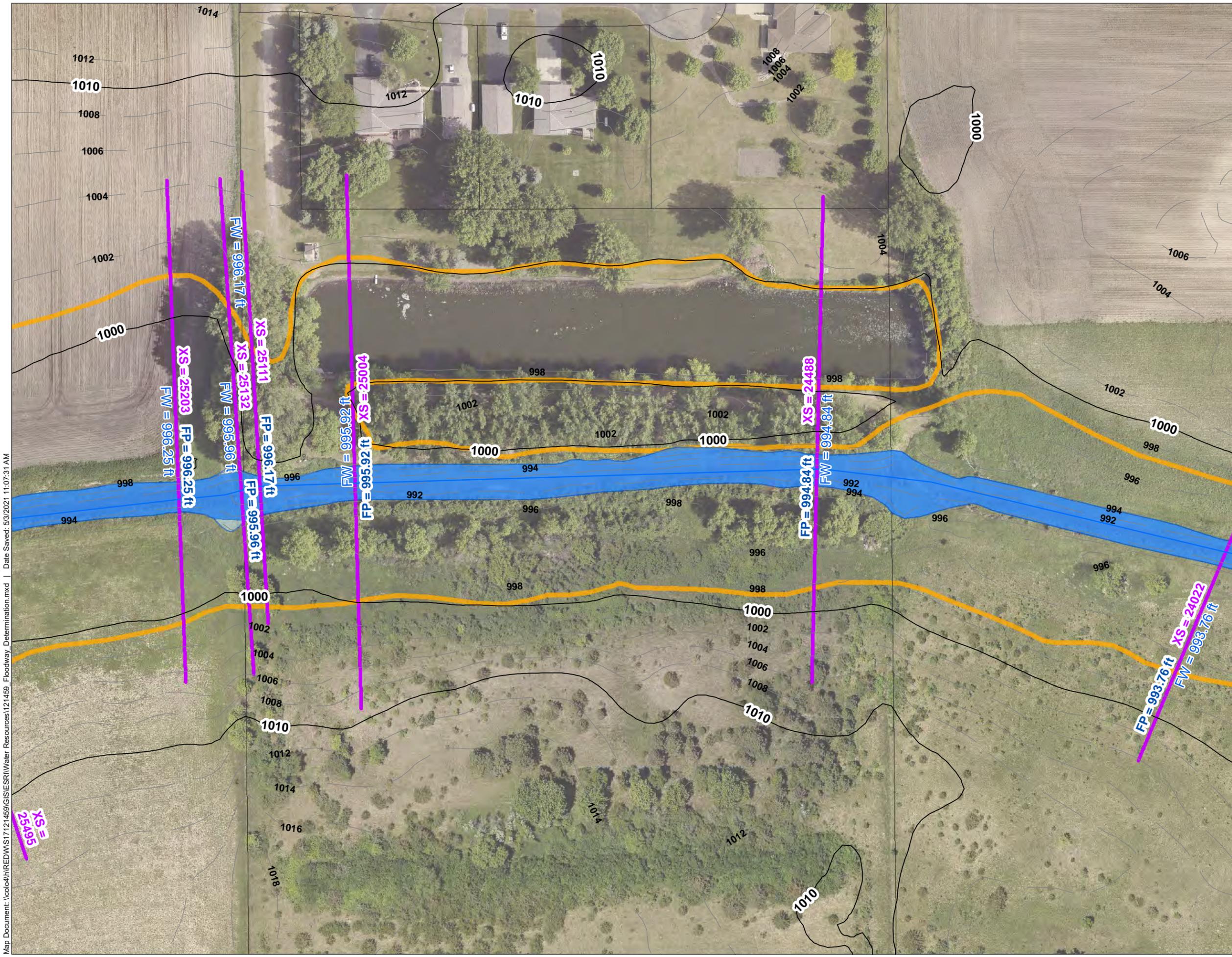


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Appendix III – Floodplain Ordinance Excerpts

Chapter 14 from Redwood Falls Unified Development Ordinance

Chapter 14 Overlay and Special Districts

ARTICLE 1. OVERLAY DISTRICT GENERAL PROVISIONS

14.01 Purpose

Overlay districts are established in recognition of the unique characteristics of land and land use within certain parts of the City, including those properties within flood-prone areas, shoreland areas and within and adjacent to the City's airport facilities. Overlay districts are further intended to protect the public health, safety, and welfare by preserving the unique character of existing areas for future use and development.

14.02 Relationship to Other Applicable Regulations

Property located within an overlay district shall be subject to the provisions of both the primary zoning district and the overlay district. Since overlay districts may be more or less restrictive than the primary zoning district, where the provisions of the overlay and primary zoning districts are in conflict, the provisions of the overlay district shall govern.

14.03 Established boundaries

Overlay district boundaries shall be as specified in the individual overlay district regulations.

14.04 Establishment of Overlay Districts

The overlay district names are:

FP	Floodplain District
W	Wetland District
A	Airport District
S	Shoreland District

ARTICLE 2. FLOODPLAIN MANAGEMENT DISTRICTS

14.05 Floodplain District Purpose

The Minnesota Department of Natural Resources, in compliance with directives from the Federal Emergency Management Agency ("FEMA") and the National Flood Insurance Program ("NFIP") has requested that the City of Redwood Falls adopt and incorporate the "Flood Insurance Study, Redwood County, Minnesota And Incorporated Areas," the accompanying Flood Insurance Rate Map Panels numbered 27127C0145C, 27127C0153C, 27127C0154C, 27127C0161C and 27127C0162C, and to make other pertinent revisions to the existing floodplain ordinance to bring it into compliance with FEMA regulations, NFIP requirements and the "Statewide Standards and Criteria for Management of Floodplain Areas of Minnesota" as set out in Minnesota Statutes § 103F and Minnesota Rules 6120.5000 to 6120.6200. To comply with these federal and state requirements, to provide for the protection and safety of residents, and to ensure that flood insurance remains available to affected residents, Redwood Falls Code of Ordinances § 11.65 and § 11.66 shall be combined into a unified floodplain ordinance and shall be amended and restated in their entirety as follows:

14.06 Statutory Authorization

The legislature of the State of Minnesota has, in Minnesota Statutes Chapter 103F and 462 delegated the responsibility to local government units to adopt regulations designed to minimize flood losses. Therefore, the City Council of the City of Redwood Falls, Minnesota does ordain as follows:

14.07 Findings of Fact

- (A) The flood hazard areas of the City of Redwood Falls, Minnesota, are subject to periodic inundation which results in potential loss of life, loss of property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures or flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety, and general welfare.
- (B) Methods Used to Analyze Flood Hazards. This Ordinance is based upon a reasonable method of analyzing flood hazards which is consistent with the standards established by the Minnesota Department of Natural Resources.
- (C) National Flood Insurance Program Compliance. This Ordinance is adopted to comply with the rules and regulations of the National Flood Insurance Program codified as 44 Code of Federal Regulations Parts 59 -78, as amended, so as to maintain the community's eligibility in the National Flood Insurance Program.

14.08 Statement of Purpose

It is the purpose of this Ordinance to promote the public health, safety, and general welfare and to minimize those losses described in section 14.07(A) by provisions contained herein.

14.09 Lands to Which Ordinance Applies

This Ordinance shall apply to all lands within the jurisdiction of the City of Redwood Falls, Minnesota shown on the Official Zoning Map and/or the attachments thereto as being located within the boundaries of the Floodway, Flood Fringe, or General Flood Plain Districts.

14.10 Establishment of Official Zoning Map

The Official Zoning Map together with all materials attached thereto is hereby adopted by reference and declared to be a part of this Ordinance. The attached material shall include the Flood Insurance Study, Redwood County, Minnesota And Incorporated Areas, the Flood Insurance Rate Map Index for Redwood County, Minnesota And Incorporated Areas with a Map Number of 27127CIND1A and the Flood Insurance Rate Map panels therein for Redwood County, Minnesota And Incorporated Areas numbered 27127C0145C, 27127C0153C, 27127C0154C, 27127C0161C and 27127C0162C; all of the aforementioned documents being dated July 16, 2013 and prepared by the Federal Emergency Management Agency. The Official Zoning Map shall be on file in the Office of the City Clerk and the Zoning Administrator.

14.11 Regulatory Flood Protection Elevation

The regulatory flood protection elevation shall be an elevation no lower than one (1) foot above the elevation of the regional flood plus any increases in flood elevation caused by encroachments on the flood plain that result from designation of a floodway.

14.12 Interpretation

- (A) In their interpretation and application, the provisions of this Ordinance shall be held to be minimum requirements and shall be liberally construed in favor of the City Council and shall not be deemed a limitation or repeal of any other powers granted by state statutes.
- (B) The boundaries of the zoning districts shall be determined by scaling distances on the Official Zoning Map. Where interpretation is needed as to the exact location of the boundaries of the district as shown on the Official Zoning Map, as for example where there appears to be a conflict between a mapped

boundary and actual field conditions and there is a formal appeal of the decision of the Zoning Administrator, the City Council shall make the necessary interpretation. All decisions will be based on elevations on the regional (100-year) flood profile, the ground elevations that existed on the site at the time the Community adopted its initial floodplain ordinance or on the date of the first National Flood Insurance Program map showing the area within the 100-year floodplain if earlier, and other available technical data. Persons contesting the location of the district boundaries shall be given a reasonable opportunity to present their case to the City Council, following review and recommendation from the Planning Commission, and to submit technical evidence.

14.13 Abrogation and Greater Restrictions

It is not intended by this Ordinance to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Ordinance imposes greater restrictions, the provisions of this Ordinance shall prevail. All other ordinances inconsistent with this Ordinance are hereby repealed to the extent of the inconsistency only.

14.14 Warning and Disclaimer of Liability

This Ordinance does not imply that areas outside the flood plain districts or land uses permitted within such districts will be free from flooding or flood damages. This Ordinance shall not create liability on the part of the City of Redwood Falls, Minnesota or any officer or employee thereof for any flood damages that result from reliance on this Ordinance or any administrative decision lawfully made thereunder.

14.15 Severability

If any section, clause, provision, or portion of this Ordinance is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this Ordinance shall not be affected thereby.

14.16 Definitions

Unless specifically defined below, words or phrases used in this Ordinance shall be interpreted so as to give them the same meaning as they have in common usage and so as to give this Ordinance its most reasonable application.

- (A) Accessory Use or Structure - a use or structure on the same lot with, and of a nature customarily incidental and subordinate to, the principal use or structure.
- (B) Basement - means any area of a structure, including crawl spaces, having its floor or base subgrade (below ground level) on all four sides, regardless of the depth of excavation below ground level.
- (C) Conditional Use - means a specific type of structure or land use listed in the official control that may be allowed but only after an in-depth review procedure and with appropriate conditions or restrictions as provided in the official zoning controls or building codes and upon a finding that: (a) certain conditions as detailed in the zoning ordinance exist; and (b) the structure and/or land use conform to the comprehensive land use plan if one exists and are compatible with the existing neighborhood.
- (D) Equal Degree of Encroachment - a method of determining the location of floodway boundaries so that flood plain lands on both sides of a stream are capable of conveying a proportionate share of flood flows.
- (E) Flood - a temporary increase in the flow or stage of a stream or in the stage of a wetland or lake that results in the inundation of normally dry areas.
- (F) Flood Frequency - the frequency for which it is expected that a specific flood stage or discharge may be equaled or exceeded.
- (G) Flood Fringe - that portion of the flood plain outside of the floodway. Flood fringe is synonymous with the term "floodway fringe" used in the Flood Insurance Study for Redwood County, Minnesota and Incorporated Areas.

- (H) Flood Plain - the beds proper and the areas adjoining a wetland, lake or watercourse which have been or hereafter may be covered by the regional flood.
- (I) Flood Proofing - a combination of structural provisions, changes, or adjustments to properties and structures subject to flooding, primarily for the reduction or elimination of flood damages.
- (J) Floodway - the bed of a wetland or lake and the channel of a watercourse and those portions of the adjoining flood plain which are reasonably required to carry or store the regional flood discharge.
- (K) Lowest Floor - the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, used solely for parking of vehicles, building access, or storage in an area other than a basement area, is not considered a building's lowest floor.
- (L) Manufactured Home - a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include the term "recreational vehicle."
- (M) Obstruction - any dam, wall, wharf, embankment, levee, dike, pile, abutment, projection, excavation, channel modification, culvert, building, wire, fence, stockpile, refuse, fill, structure, or matter in, along, across, or projecting into any channel, watercourse, or regulatory flood plain which may impede, retard, or change the direction of the flow of water, either in itself or by catching or collecting debris carried by such water.
- (O) Principal Use or Structure - means all uses or structures that are not accessory uses or structures.
- (P) Reach - a hydraulic engineering term to describe a longitudinal segment of a stream or river influenced by a natural or man-made obstruction. In an urban area, the segment of a stream or river between two consecutive bridge crossings would most typically constitute a reach.
- (Q) Recreational Vehicle - a vehicle that is built on a single chassis, is 400 square feet or less when measured at the largest horizontal projection, is designed to be self-propelled or permanently towable by a light duty truck, and is designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use. For the purposes of this Ordinance, the term recreational vehicle shall be synonymous with the term travel trailer/travel vehicle.
- (R) Regional Flood - a flood which is representative of large floods known to have occurred generally in Minnesota and reasonably characteristic of what can be expected to occur on an average frequency in the magnitude of the 100-year recurrence interval. Regional flood is synonymous with the term "base flood" used in a flood insurance study.
- (S) Regulatory Flood Protection Elevation - The regulatory flood protection elevation shall be an elevation no lower than one foot above the elevation of the regional flood plus any increases in flood elevation caused by encroachments on the flood plain that result from designation of a floodway.
- (T) Structure - anything constructed or erected on the ground or attached to the ground or on-site utilities, including, but not limited to, buildings, factories, sheds, detached garages, cabins, manufactured homes, recreational vehicles not meeting the exemption criteria specified in 14.24(C)(1) of this Ordinance and other similar items.
- (U) Substantial Damage - means damage of any origin sustained by a structure where the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
- (V) Substantial Improvement - within any consecutive 365-day period, any reconstruction, rehabilitation (including normal maintenance and repair), repair after damage, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "substantial

damage,” regardless of the actual repair work performed. The term does not, however, include either: (a) any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or (b) any alteration of an “historic structure,” provided that the alteration will not preclude the structure’s continued designation as an “historic structure.” For the purpose of this Ordinance, “historic structure” shall be as defined in 44 Code of Federal Regulations, Part 59.1.

- (W) Variance - means a modification of a specific permitted development standard required in an official control including this Ordinance to allow an alternative development standard not stated as acceptable in the official control, but only as applied to a particular property for the purpose of alleviating a hardship, practical difficulty or unique circumstance as defined and elaborated upon in a community’s respective planning and zoning enabling legislation.

14.17 Annexations

The Flood Insurance Rate Map panels adopted by reference into section 14.07 above may include floodplain areas that lie outside of the corporate boundaries of the City of Redwood Falls, Minnesota at the time of adoption of this ordinance. If any of these floodplain land areas are annexed into the City of Redwood Falls, Minnesota after the date of adoption of this ordinance, the newly annexed floodplain lands shall be subject to the provisions of this ordinance immediately upon the date of annexation into the City of Redwood Falls, Minnesota

14.18 Establishment of Zoning Districts

- (A) Districts.
- (1) Floodway District. The Floodway District shall include those areas designated as floodway on the Flood Insurance Rate Map adopted in section 14.09.
 - (2) Flood Fringe District. The Flood Fringe District shall include those areas designated as floodway fringe. The Flood Fringe District shall include those areas shown on the Flood Insurance Rate Map as adopted in section 14.09 as being within Zone AE but being located outside of the floodway.
 - (3) General Flood Plain District. The General Flood Plain District shall include those areas designated as Zone AE without a floodway on the Flood Insurance Rate Map adopted in section 14.09.
- (B) Compliance. No new structure or land shall hereafter be used and no structure shall be constructed, located, extended, converted, or structurally altered without full compliance with the terms of this Ordinance and other applicable regulations which apply to uses within the jurisdiction of this Ordinance. Within the Floodway, Flood Fringe and General Flood Plain Districts, all uses not listed as permitted uses or conditional uses in sections 14.19, 14.20 and 14.21 that follow, respectively, shall be prohibited. In addition, a caution is provided here that:
- (1) New manufactured homes, replacement manufactured homes and certain travel trailers and travel vehicles are subject to the general provisions of this Ordinance and specifically section 14.24.
 - (2) Modifications, additions, structural alterations, normal maintenance and repair, or repair after damage to existing nonconforming structures and nonconforming uses of structures or land are regulated by the general provisions of this Ordinance and specifically section 14.26.
 - (3) As-built elevations for elevated or flood proofed structures must be certified by ground surveys and flood proofing techniques must be designed and certified by a registered professional engineer or architect as specified in the general provisions of this Ordinance and specifically as stated in section 14.25 of this Ordinance.

14.19 Floodway District (FW)

(A) Permitted Uses.

- (1) General farming, pasture, grazing, outdoor plant nurseries, horticulture, truck farming, forestry, sod farming, and wild crop harvesting.
- (2) Industrial-commercial loading areas, parking areas, and airport landing strips.
- (3) Private and public golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, boat launching ramps, swimming areas, parks, wildlife and nature preserves, game farms, fish hatcheries, shooting preserves, target ranges, trap and skeet ranges, hunting and fishing areas, and single or multiple purpose recreational trails.
- (4) Residential lawns, gardens, parking areas, and play areas.

(B) Standards for Floodway Permitted Uses.

- (1) The use shall have a low flood damage potential.
- (2) The use shall be permissible in the underlying zoning district if one exists.
- (3) The use shall not obstruct flood flows or increase flood elevations and shall not involve structures, fill, obstructions, excavations or storage of materials or equipment.

(C) Conditional Uses.

- (1) Structures accessory to the uses listed in section 14.19 (A) above and the uses listed in section 14.19(C)(2)- 4(C)(7) below.
- (2) Extraction and storage of sand, gravel, and other materials.
- (3) Marinas, boat rentals, docks, piers, wharves, and water control structures.
- (4) Railroads, streets, bridges, utility transmission lines, and pipelines.
- (5) Storage yards for equipment, machinery, or materials.
- (6) Placement of fill or construction of fences.
- (7) Recreational vehicles either on individual lots of record or in existing or new subdivisions or commercial or condominium type campgrounds, subject to the exemptions and provisions of section 14.24(C) of this Ordinance.
- (8) Structural works for flood control such as levees, dikes and floodwalls constructed to any height where the intent is to protect individual structures and levees or dikes where the intent is to protect agricultural crops for a frequency flood event equal to or less than the 10-year frequency flood event.

(D) Standards for Floodway Conditional Uses

- (1) All Uses. No structure (temporary or permanent), fill (including fill for roads and levees), deposit, obstruction, storage of materials or equipment, or other uses may be allowed as a conditional use that will cause any increase in the stage of the 100-year or regional flood or cause an increase in flood damages in the reach or reaches affected.
- (2) All floodway conditional uses shall be subject to the procedures and standards contained in section 14.25(D) of this Ordinance.
- (3) The conditional use shall be permissible in the underlying zoning district if one exists.

- (4) Fill.
- (a) Fill, dredge spoil, and all other similar materials deposited or stored in the flood plain shall be protected from erosion by vegetative cover, mulching, riprap or other acceptable method.
 - (b) Dredge spoil sites and sand and gravel operations shall not be allowed in the floodway unless a long-term site development plan is submitted which includes an erosion/sedimentation prevention element to the plan.
 - (c) As an alternative, and consistent with (b) immediately above, dredge spoil disposal and sand and gravel operations may allow temporary, on-site storage of fill or other materials which would have caused an increase to the stage of the 100-year or regional flood but only after the City Council has received an appropriate plan which assures the removal of the materials from the floodway based upon the flood warning time available. The conditional use permit must be title registered with the property in the Office of the County Recorder.
- (5) Accessory Structures.
- (a) Accessory structures shall not be designed for human habitation.
 - (b) Accessory structures, if permitted, shall be constructed and placed on the building site so as to offer the minimum obstruction to the flow of flood waters:
 - (1) Whenever possible, structures shall be constructed with the longitudinal axis parallel to the direction of flood flow; and
 - (2) So far as practicable, structures shall be placed approximately on the same flood flow lines as those of adjoining structures.
 - (c) Accessory structures shall be elevated on fill or structurally dry flood proofed in accordance with the FP-1 or FP-2 flood proofing classifications in the State Building Code. As an alternative, an accessory structure may be flood proofed to the FP-3 or FP-4 flood proofing classification in the State Building Code provided the accessory structure constitutes a minimal investment, does not exceed 500 square feet in size at its largest projection, and for a detached garage, the detached garage must be used solely for parking of vehicles and limited storage. All flood proofed accessory structures must meet the following additional standards:
 - (1) The structure must be adequately anchored to prevent flotation, collapse or lateral movement of the structure and shall be designed to equalize hydrostatic flood forces on exterior walls;
 - (2) Any mechanical and utility equipment in a structure must be elevated to or above the regulatory flood protection elevation or properly flood proofed; and
 - (3) To allow for the equalization of hydrostatic pressure, there must be a minimum of two "automatic" openings in the outside walls of the structure having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. There must be openings on at least two sides of the structure and the bottom of all openings must be no higher than one foot above the lowest adjacent grade to the structure. Using human intervention to open a garage door prior to flooding will not satisfy this requirement for automatic openings.

- (6) Storage of Materials and Equipment.
 - (a) The storage or processing of materials that are, in time of flooding, flammable, explosive, or potentially injurious to human, animal, or plant life is prohibited.
 - (b) Storage of other materials or equipment may be allowed if readily removable from the area within the time available after a flood warning and in accordance with a plan approved by the City Council.
- (7) Structural works for flood control that will change the course, current or cross section of protected wetlands or public waters shall be subject to the provisions of Minnesota Statute, Chapter 103G. Community-wide structural works for flood control intended to remove areas from the regulatory flood plain shall not be allowed in the floodway.
- (8) A levee, dike or floodwall constructed in the floodway shall not cause an increase to the 100-year or regional flood and the technical analysis must assume equal conveyance or storage loss on both sides of a stream.

14.20 Flood Fringe District

- (A) *Permitted Uses.* Permitted uses shall be those uses of land or structures listed as permitted uses in the underlying zoning use district(s). If no pre-existing, underlying zoning use districts exist, then any residential or non-residential structure or use of a structure or land shall be a permitted use in the Flood Fringe District provided such use does not constitute a public nuisance. All permitted uses shall comply with the standards for Flood Fringe District "Permitted Uses" listed in section 14.20(B) and the "Standards for all Flood Fringe Uses" listed in section 14.20(E).
- (B) Standards for Flood Fringe Permitted Uses.
 - (1) All structures, including accessory structures, must be elevated on fill so that the lowest floor including basement floor is at or above the regulatory flood protection elevation. The finished fill elevation for structures shall be no lower than one (1) foot below the regulatory flood protection elevation and the fill shall extend at such elevation at least fifteen (15) feet beyond the outside limits of the structure erected thereon.
 - (2) As an alternative to elevation on fill, accessory structures that constitute a minimal investment and that do not exceed 500 square feet at its largest projection may be internally flood proofed in accordance with section 14.19(D)(5)(c).
 - (3) The cumulative placement of fill where at any one time in excess of one-thousand (1,000) cubic yards of fill is located on the parcel shall be allowable only as a conditional use, unless said fill is specifically intended to elevate a structure in accordance with section 14.20(B)(1) of this ordinance.
 - (4) The storage of any materials or equipment shall be elevated on fill to the regulatory flood protection elevation.
 - (5) The provisions of section 14.20(E) of this Ordinance shall apply.
- (C) *Conditional Uses.* Any structure that is not elevated on fill or flood proofed in accordance with sections 14.20(B)(1) – 14.20(B)(2), and/or any use of land that does not comply with the standards in sections 14.20(B)(3) – 14.20(B)(4), shall only be allowable as a conditional use. An application for a conditional use shall be subject to the standards and criteria and evaluation procedures specified in sections 14.20(D) – 14.20(E) and section 14.25(D) of this Ordinance.
- (D) *Standards for Flood Fringe Conditional Uses.*

- (1) Alternative elevation methods other than the use of fill may be utilized to elevate a structure's lowest floor above the regulatory flood protection elevation. These alternative methods may include the use of stilts, pilings, parallel walls, etc., or above-grade, enclosed areas such as crawl spaces or tuck under garages. The base or floor of an enclosed area shall be considered above-grade and not a structure's basement or lowest floor if: 1) the enclosed area is above-grade on at least one side of the structure; 2) it is designed to internally flood and is constructed with flood resistant materials; and 3) it is used solely for parking of vehicles, building access or storage. The above-noted alternative elevation methods are subject to the following additional standards:
 - (a) Design and Certification. The structure's design and as-built condition must be certified by a registered professional engineer or architect as being in compliance with the general design standards of the State Building Code and, specifically, that all electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities must be at or above the regulatory flood protection elevation or be designed to prevent flood water from entering or accumulating within these components during times of flooding.
 - (b) Specific Standards for Above-grade, Enclosed Areas. Above-grade, fully enclosed areas such as crawl spaces or tuck under garages must be designed to internally flood and the design plans must stipulate: (1) A minimum area of openings in the walls where internal flooding is to be used as a flood proofing technique. There shall be a minimum of two openings on at least two sides of the structure and the bottom of all openings shall be no higher than one-foot above grade. The automatic openings shall have a minimum net area of not less than one square inch for every square foot of enclosed area subject to flooding unless a registered professional engineer or architect certifies that a smaller net area would suffice. The automatic openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of flood waters without any form of human intervention; and (2) That the enclosed area will be designed of flood resistant materials in accordance with the FP-3 or FP-4 classifications in the State Building Code and shall be used solely for building access, parking of vehicles or storage.
- (2) Basements, as defined by section 14.16(B) of this Ordinance, shall be subject to the following:
 - (a) Residential basement construction shall not be allowed below the regulatory flood protection elevation.
 - (b) Non-residential basements may be allowed below the regulatory flood protection elevation provided the basement is structurally dry flood proofed in accordance with section 14.20(D)(3) of this Ordinance.
- (3) All areas of non-residential structures including basements to be placed below the regulatory flood protection elevation shall be flood proofed in accordance with the structurally dry flood proofing classifications in the State Building Code. Structurally dry flood proofing must meet the FP-1 or FP-2 flood proofing classification in the State Building Code and this shall require making the structure watertight with the walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. Structures flood proofed to the FP-3 or FP-4 classification shall not be permitted.
- (4) When at any one time more than 1,000 cubic yards of fill or other similar material is located on a parcel for such activities as on-site storage, landscaping, sand and gravel operations, landfills, roads, dredge spoil disposal or construction of flood control works, an erosion/sedimentation control plan must be submitted unless the community is enforcing a state approved shoreland

management ordinance. In the absence of a state approved shoreland ordinance, the plan must clearly specify methods to be used to stabilize the fill on site for a flood event at a minimum of the 100-year or regional flood event. The plan must be prepared and certified by a registered professional engineer or other qualified individual acceptable to the City Council. The plan may incorporate alternative procedures for removal of the material from the flood plain if adequate flood warning time exists.

- (5) Storage of Materials and Equipment.
 - (a) The storage or processing of materials that are, in time of flooding, flammable, explosive, or potentially injurious to human, animal, or plant life is prohibited.
 - (b) Storage of other materials or equipment may be allowed if readily removable from the area within the time available after a flood warning and in accordance with a plan approved by the City Council.
- (6) The provisions of section 14.20(E) of this Ordinance shall also apply.

(E) Standards for All Flood Fringe Uses.

- (1) All new principal structures must have vehicular access at or above an elevation not more than two (2) feet below the regulatory flood protection elevation. If a variance to this requirement is granted, the City Council must specify limitations on the period of use or occupancy of the structure for times of flooding and only after determining that adequate flood warning time and local flood emergency response procedures exist.
- (2) Commercial Uses. Accessory land uses, such as yards, railroad tracks, and parking lots may be at elevations lower than the regulatory flood protection elevation. However, a permit for such facilities to be used by the employees or the general public shall not be granted in the absence of a flood warning system that provides adequate time for evacuation if the area would be inundated to a depth and velocity such that when multiplying the depth (in feet) times velocity (in feet per second) the product number exceeds four (4) upon occurrence of the regional flood.
- (3) Manufacturing and Industrial Uses. Measures shall be taken to minimize interference with normal plant operations especially along streams having protracted flood durations. Certain accessory land uses such as yards and parking lots may be at lower elevations subject to requirements set out in section 14.20(E)(2) above. In considering permit applications, due consideration shall be given to needs of an industry whose business requires that it be located in flood plain areas.
- (4) Fill shall be properly compacted and the slopes shall be properly protected by the use of riprap, vegetative cover or other acceptable method. The Federal Emergency Management Agency (FEMA) has established criteria for removing the special flood hazard area designation for certain structures properly elevated on fill above the 100-year flood elevation - FEMA's requirements incorporate specific fill compaction and side slope protection standards for multi-structure or multi-lot developments. These standards should be investigated prior to the initiation of site preparation if a change of special flood hazard area designation will be requested.
- (5) Flood plain developments shall not adversely affect the hydraulic capacity of the channel and adjoining flood plain of any tributary watercourse or drainage system where a floodway or other encroachment limit has not been specified on the Official Zoning Map.
- (6) Standards for recreational vehicles are contained in section 14.24(C).

- (7) All manufactured homes must be securely anchored to an adequately anchored foundation system that resists flotation, collapse and lateral movement. Methods of anchoring may include, but are not to be limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state or local anchoring requirements for resisting wind forces.

14.21 General Flood Plain District

(A) Permissible Uses.

- (1) The uses listed in section 14.19(A) of this Ordinance shall be permitted uses.
- (2) All other uses shall be subject to the floodway/flood fringe evaluation criteria pursuant to section 14.21(B) below. Section 14.19 shall apply if the proposed use is in the Floodway District and section 14.20 shall apply if the proposed use is in the Flood Fringe District.

(B) Procedures for Floodway and Flood Fringe Determinations Within the General Flood Plain District.

- (1) Upon receipt of an application for a permit or other approval within the General Flood Plain District, the applicant shall be required to furnish such of the following information as is deemed necessary by the Zoning Administrator for the determination of the regulatory flood protection elevation and whether the proposed use is within the Floodway or Flood Fringe District.
 - (a) A typical valley cross-section(s) showing the channel of the stream, elevation of land areas adjoining each side of the channel, cross-sectional areas to be occupied by the proposed development, and high water information.
 - (b) Plan (surface view) showing elevations or contours of the ground, pertinent structure, fill, or storage elevations, the size, location, and spatial arrangement of all proposed and existing structures on the site, and the location and elevations of streets.
 - (c) Photographs showing existing land uses, vegetation upstream and downstream, and soil types.
 - (d) Profile showing the slope of the bottom of the channel or flow line of the stream for at least 500 feet in either direction from the proposed development.
- (2) The applicant shall be responsible to submit one copy of the above information to a designated engineer or other expert person or agency for technical assistance in determining whether the proposed use is in the Floodway or Flood Fringe District and to determine the regulatory flood protection elevation. Procedures consistent with Minnesota Regulations 1983, Parts 6120.5000 - 6120.6200 and 44 Code of Federal Regulations Part 65 shall be followed in this expert evaluation. The designated engineer or expert is strongly encouraged to discuss the proposed technical evaluation methodology with the respective Department of Natural Resources' Area Hydrologist prior to commencing the analysis. The designated engineer or expert shall:
 - (a) Estimate the peak discharge of the regional flood.
 - (b) Calculate the water surface profile of the regional flood based upon a hydraulic analysis of the stream channel and overbank areas.
 - (c) Compute the floodway necessary to convey or store the regional flood without increasing flood stages more than 0.5 foot. A lesser stage increase than .5' shall be required if, as a result of the additional stage increase, increased flood damages would result. An equal degree of encroachment on both sides of the stream within the reach shall be assumed in computing floodway boundaries.

- (3) The Zoning Administrator shall present the technical evaluation and findings of the designated engineer or expert to the City Council. The Council must formally accept the technical evaluation and the recommended Floodway and/or Flood Fringe District boundary or deny the permit application. The City Council, prior to official action, may submit the application and all supporting data and analyses to the Federal Emergency Management Agency, the Department of Natural Resources or the Planning Commission for review and comment. Once the Floodway and Flood Fringe District Boundaries have been determined, the City Council shall refer the matter back to the Zoning Administrator who shall process the permit application consistent with the applicable provisions of sections 14.19 and 14.20 of this Ordinance.

14.22 Subdivisions

- (A) Review Criteria. No land shall be subdivided which is unsuitable for the reason of flooding, inadequate drainage, water supply or sewage treatment facilities. All lots within the flood plain districts shall be able to contain a building site outside of the Floodway District at or above the regulatory flood protection elevation. All subdivisions shall have water and sewage treatment facilities that comply with the provisions of this Ordinance and have road access both to the subdivision and to the individual building sites no lower than two feet below the regulatory flood protection elevation. For all subdivisions in the flood plain, the Floodway and Flood Fringe District boundaries, the regulatory flood protection elevation and the required elevation of all access roads shall be clearly labeled on all required subdivision drawings and platting documents.
- (B) Floodway/Flood Fringe Determinations in the General Flood Plain District. In the General Flood Plain District, applicants shall provide the information required in section 14.21(B) of this Ordinance to determine the 100-year flood elevation, the Floodway and Flood Fringe District boundaries and the regulatory flood protection elevation for the subdivision site.
- (C) Removal of Special Flood Hazard Area Designation. The Federal Emergency Management Agency (FEMA) has established criteria for removing the special flood hazard area designation for certain structures properly elevated on fill above the 100-year flood elevation. FEMA's requirements incorporate specific fill compaction and side slope protection standards for multi-structure or multi-lot developments. These standards should be investigated prior to the initiation of site preparation if a change of special flood hazard area designation will be requested.

14.23 Public Utilities, Railroads, Roads and Bridges

- (A) Public Utilities. All public utilities and facilities such as gas, electrical, sewer, and water supply systems to be located in the flood plain shall be flood proofed in accordance with the State Building Code or elevated to above the regulatory flood protection elevation.
- (B) Public Transportation Facilities. Railroad tracks, roads, and bridges to be located within the flood plain shall comply with sections 14.19 and 14.20 of this Ordinance. Elevation to the regulatory flood protection elevation shall be provided where failure or interruption of these transportation facilities would result in danger to the public health or safety or where such facilities are essential to the orderly functioning of the area. Minor or auxiliary roads or railroads may be constructed at a lower elevation where failure or interruption of transportation services would not endanger the public health or safety.
- (C) On-site Sewage Treatment and Water Supply Systems. Where public utilities are not provided: 1) On-site water supply systems must be designed to minimize or eliminate infiltration of flood waters into the systems; and 2) New or replacement on-site sewage treatment systems must be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and they shall not be subject to impairment or contamination during times of flooding. Any sewage treatment system designed in accordance with the State's current statewide standards for on-site sewage treatment systems shall be determined to be in compliance with this Subdivision.

Appendix IV – FIRM and FIS Excerpts

NOTES TO USERS

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To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

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Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 15. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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Redwood County
Unincorporated Areas
270644



LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE AE** No Base Flood Elevations determined.
- ZONE AH** Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AR** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE A99** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently identified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE AV** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS
- ZONE D** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE E** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHERWISE PROTECTED AREAS (OPAs)
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

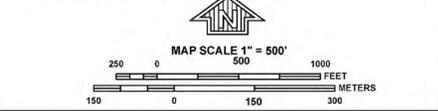
*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Transect line
- 45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 1000-meter Universal Transverse Mercator grid values, zone 15
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
July 16, 2013

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0162C

FIRM

FLOOD INSURANCE RATE MAP

REDWOOD COUNTY, MINNESOTA AND INCORPORATED AREAS

PANEL 162 OF 700
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
REDWOOD COUNTY	270644	0162	C
REDWOOD FALLS, CITY OF	270393	0162	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
27127C0162C
EFFECTIVE DATE
JULY 16, 2013
Federal Emergency Management Agency

NOTES TO USERS

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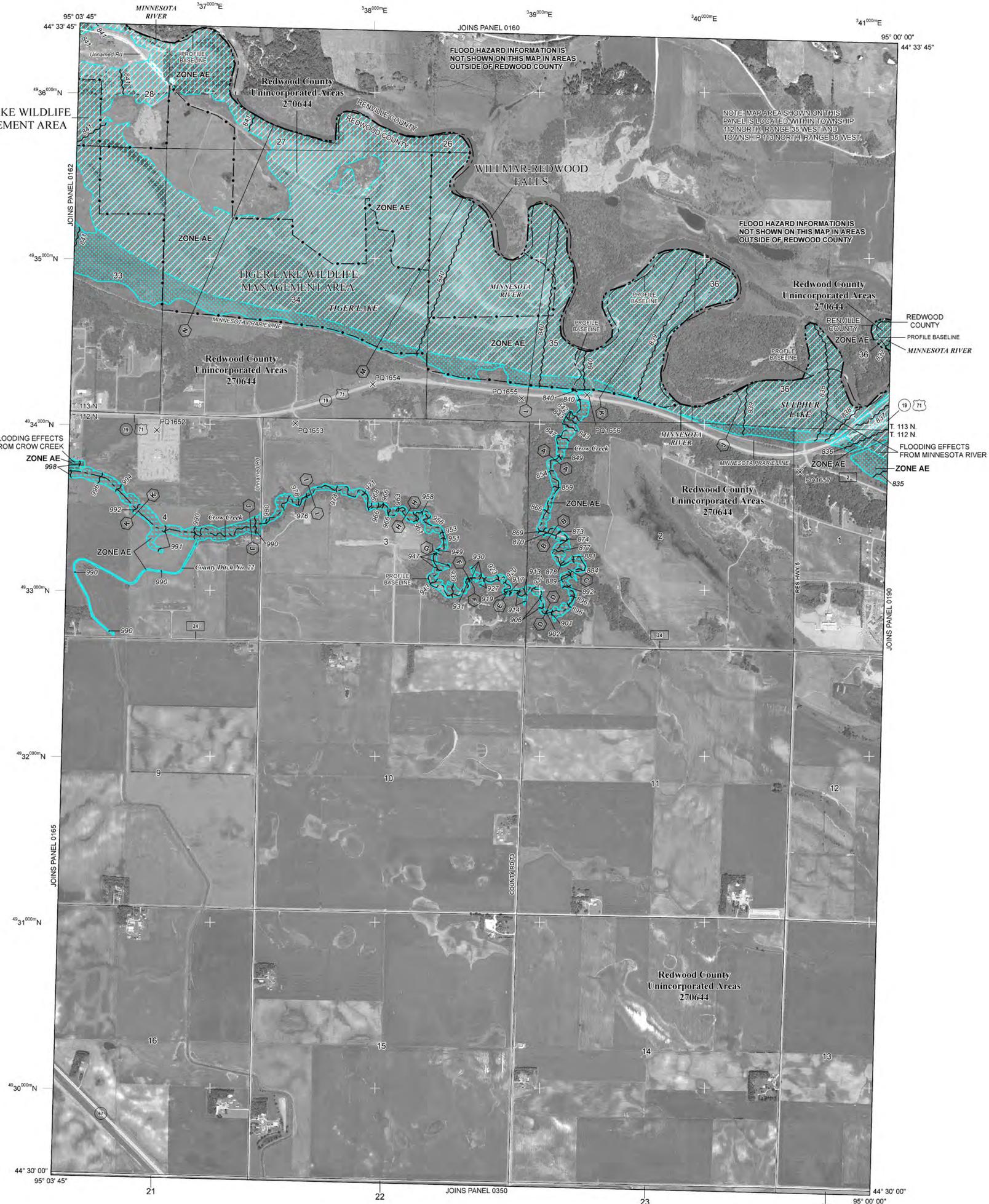
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TIGER LAKE WILDLIFE MANAGEMENT AREA



LEGEND

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD. The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
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- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
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- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

Cross section line

Transect line

45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

1000-meter Universal Transverse Mercator grid values, zone 15

Bench mark (see explanation in Notes to Users section of this FIRM panel)

River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
July 16, 2013

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

NFIP

PANEL 0170C

FIRM

FLOOD INSURANCE RATE MAP

REDWOOD COUNTY, MINNESOTA AND INCORPORATED AREAS

PANEL 170 OF 700
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
REDWOOD COUNTY	270644	0170	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
27127C0170C

EFFECTIVE DATE
JULY 16, 2013

Federal Emergency Management Agency

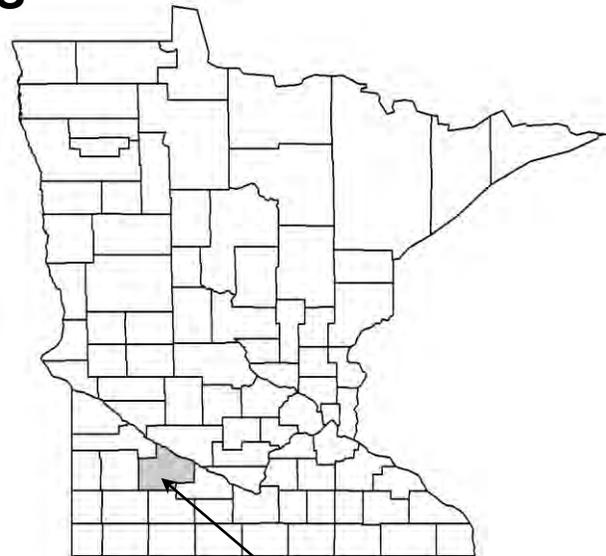
FLOOD INSURANCE STUDY



REDWOOD COUNTY, MINNESOTA AND INCORPORATED AREAS

<i>Community Name</i>	<i>Community Number</i>
-----------------------	-------------------------

*BELVIEW, CITY OF	270680
*CLEMETS, CITY OF	270650
DELHI, CITY OF	270563
*LAMBERTON, CITY OF	270676
*LUCAN, CITY OF	270677
*MILROY, CITY OF	270696
*MORGAN, CITY OF	270702
REDWOOD COUNTY (UNINCORPORATED AREAS)	270644
REDWOOD FALLS, CITY OF	270393
REVERE, CITY OF	270565
SANBORN, CITY OF	270394
SEAFORTH, CITY OF	270602
VESTA, CITY OF	270609
*WABASSO, CITY OF	270700
WALNUT GROVE, CITY OF	270718
*WANDA, CITY OF	270705



Redwood County

*No Special Flood Hazard Areas Identified

Effective: July 16, 2013



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
27127CV000A

Table 2 - Hydraulic Analysis Summary for Stream Segments without Floodways

CROSS SECTION	DISTANCE	MEAN VELOCITY (FEET PER SECOND)	1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)
CROW CREEK			
A	3,002 ¹	8.3	849.2
B	5,174 ¹	6.4	871.2
C	7,445 ¹	11.0	886.6
D	9,042 ¹	7.1	902.7
E	10,642 ¹	6.2	918.1
F	12,222 ¹	10.9	930.8
G	14,325 ¹	12.2	946.9
H	16,408 ¹	6.3	961.4
I	19,534 ¹	6.0	975.7
J	21,387 ¹	2.5	989.2
K	24,115 ¹	3.3	991.7
L	27,987 ¹	8.8	1,002.6
M	32,574 ¹	13.1	1,008.9
RAMSEY CREEK			
A	1,400 ²	12.6	889.8
B	5,239 ²	7.5	945.9
C	8,027 ²	6.4	966.8
D	10,534 ²	3.3	978.7
E	13,035 ²	4.8	987.5
F	14,840 ²	5.2	995.1
G	17,295 ²	4.7	1,005.0
H	20,508 ²	4.0	1,009.9
I	22,413 ²	2.1	1,012.7
J	27,037 ²	2.3	1,015.6

¹Distance in feet above county boundary

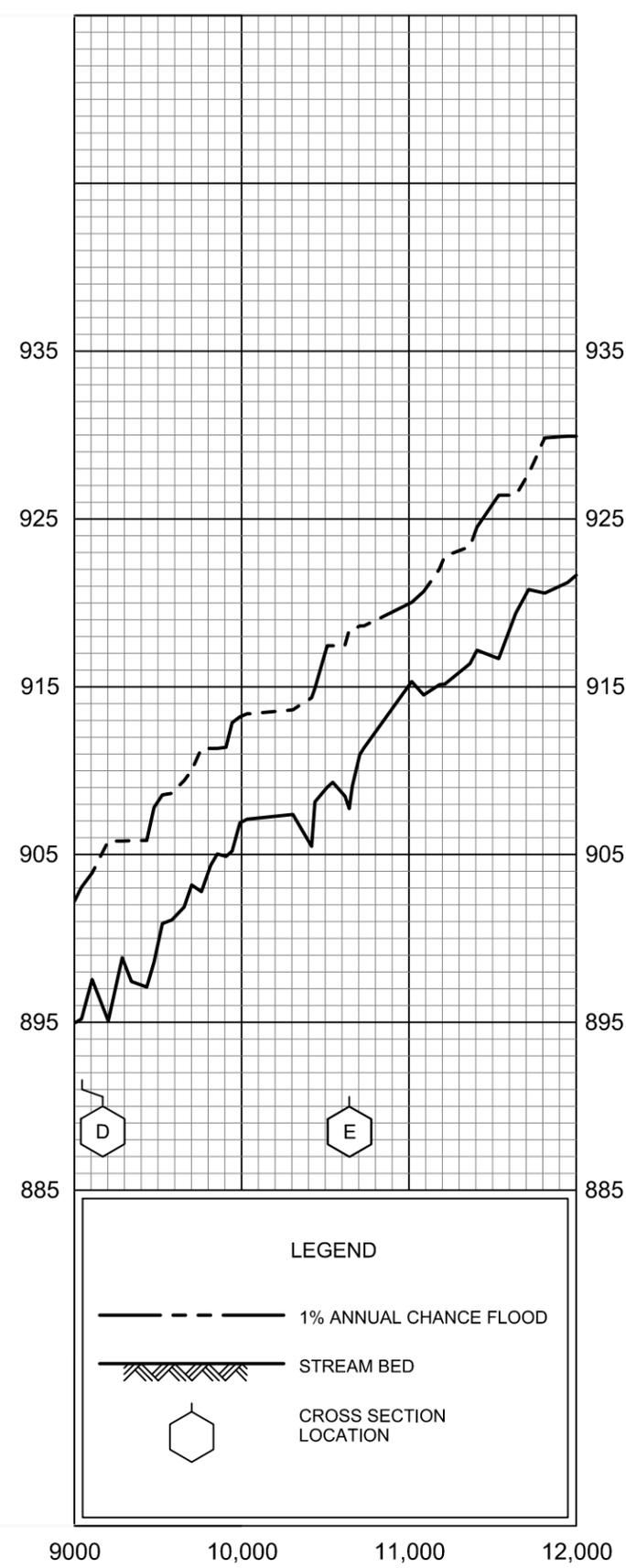
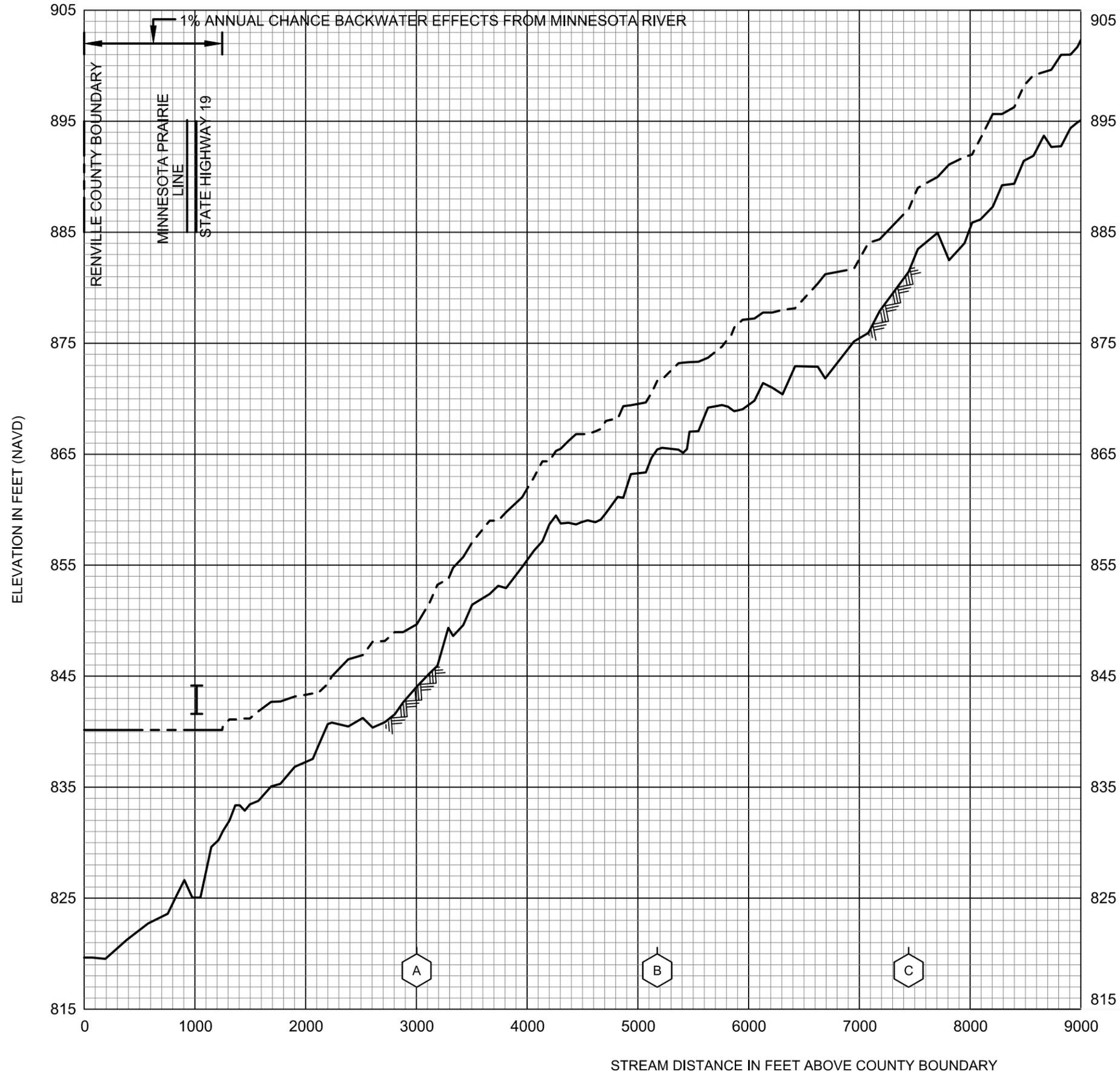
²Distance in feet above confluence with Redwood River

Channel roughness factors (Manning’s “n”) used in the hydraulic computations were based on engineering judgement, aerial photographs and field observations of the stream and floodplain areas. The Manning’s “n” values for all detailed studied streams are listed in the following tabulation:

Manning's "n" Values

<u>Stream</u>	<u>Channel "n"</u>	<u>Overbank "n"</u>
Cottonwood River	0.010-0.110	0.030-0.080
Crow Creek	*	*
Minnesota River	0.035-0.052	0.045-0.070
Redwood River	0.000-0.450	0.000-0.450
Ramsey Creek	*	*

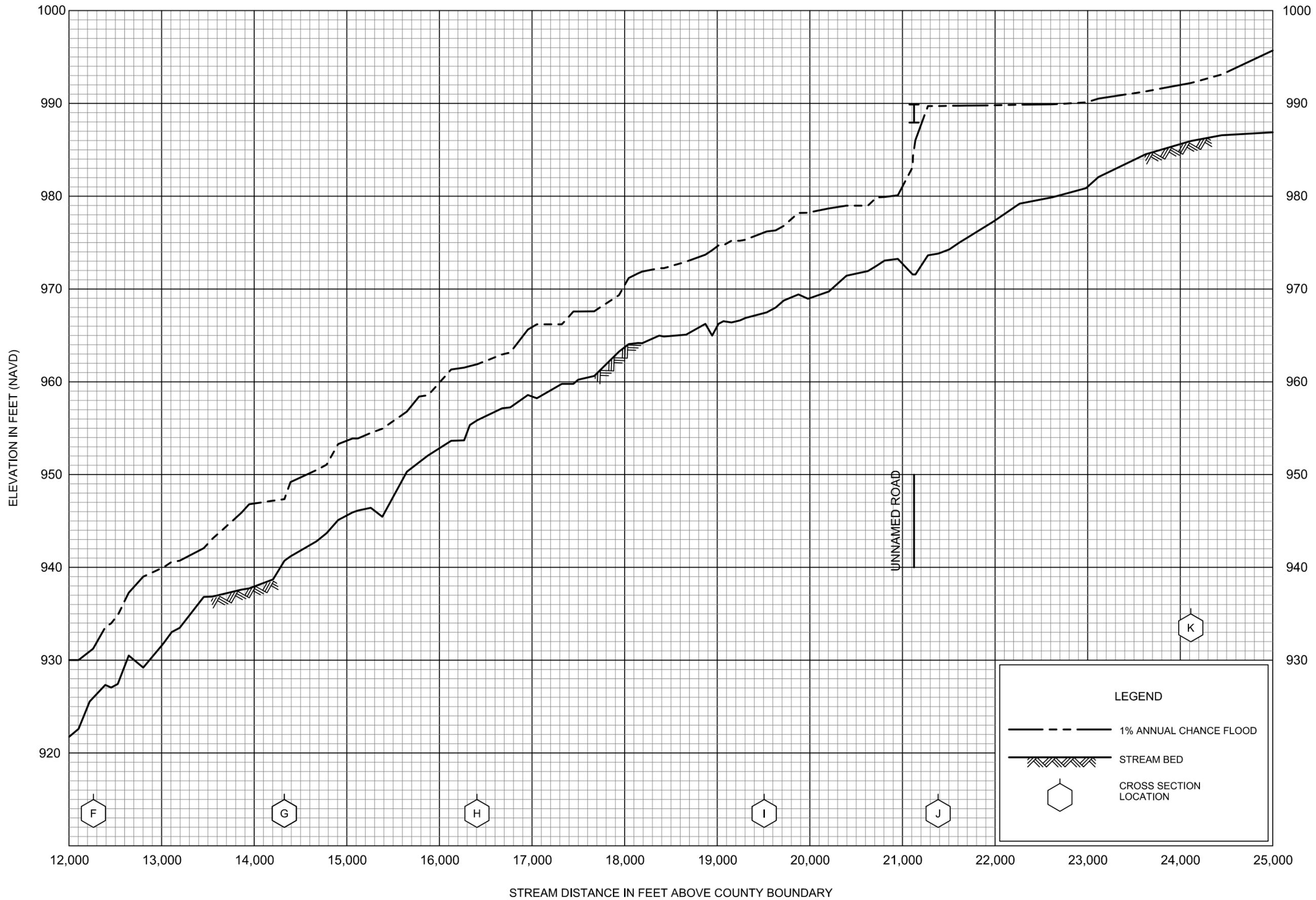
* Data Not Available



FLOOD PROFILES

CROW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
 REDWOOD COUNTY, MN
 AND INCORPORATED AREAS

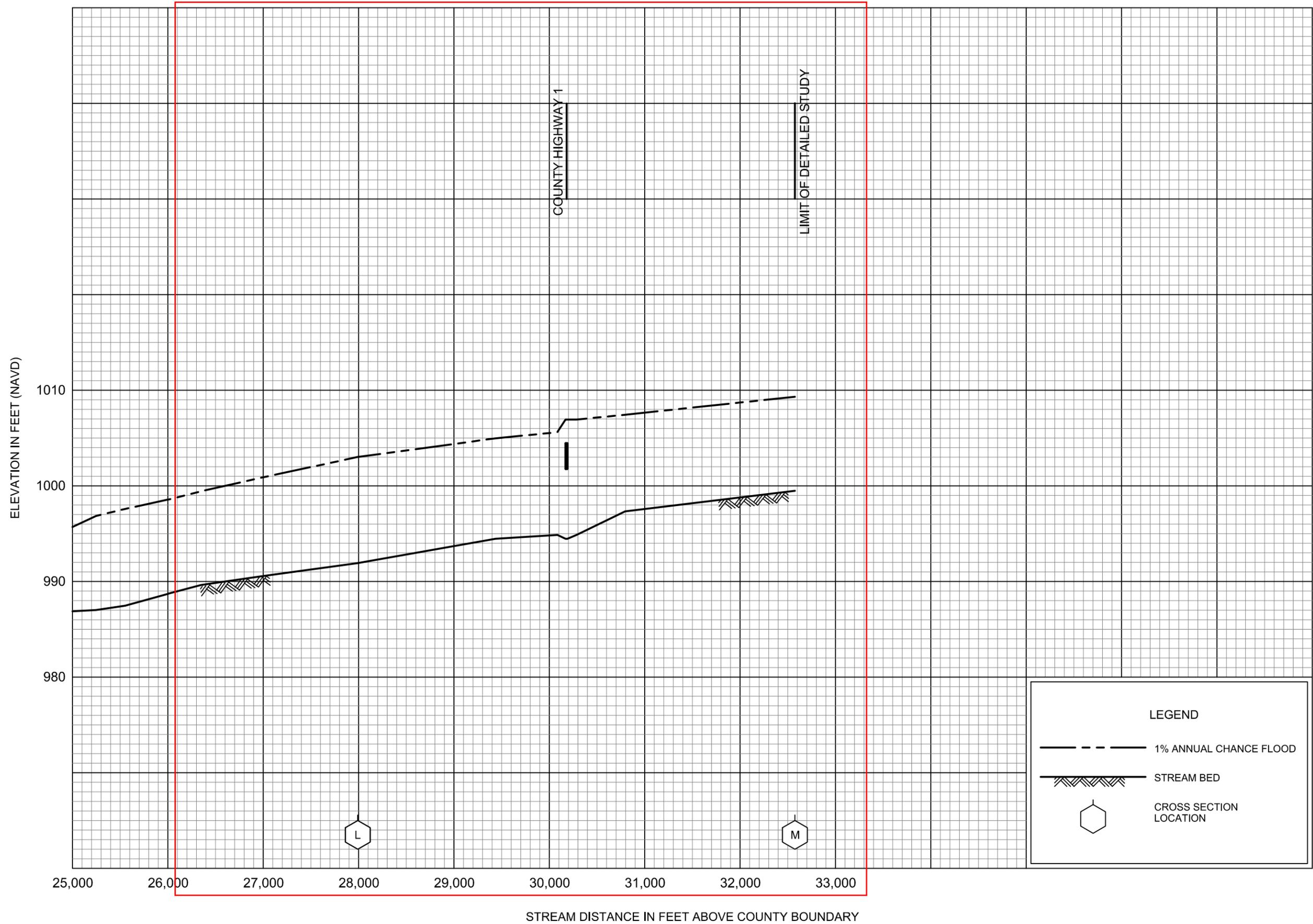


FLOOD PROFILES

CROW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

REDWOOD COUNTY, MN
AND INCORPORATED AREAS



FLOOD PROFILES

CROW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
 REDWOOD COUNTY, MN
 AND INCORPORATED AREAS



- CONSULTANTS
- ENVIRONMENTAL
 - GEOTECHNICAL
 - MATERIALS
 - FORENSICS

REPORT OF GEOTECHNICAL EXPLORATION AND REVIEW

Proposed SE Development
Redwood Falls, Minnesota

AET Project No. 13-20780

Date: April 15, 2021

Prepared for:

City of Redwood Falls
333 S. Washington St.
PO Box 526
Redwood Falls, MN 56283





CONSULTANTS
· ENVIRONMENTAL
· GEOTECHNICAL
· MATERIALS
· FORENSICS

April 15, 2021

City of Redwood Falls
333 S. Washington St.
PO Box 526
Redwood Falls, MN 56283

Attn: Mr. James Doering

RE: Report of Geotechnical Exploration and Review
Proposed SE Development
Redwood Falls, Minnesota
Report No. 13-20780

Dear Mr. Doering:

American Engineering Testing, Inc. (AET) is pleased to present the results of our subsurface exploration program and geotechnical engineering review for the Proposed Soil Boring Exploration near Redwood Falls, Minnesota. These services were performed according to our proposal to you dated March 5, 2021.

We are submitting one (1) electronic copy of the report to you.

Please contact me if you have any questions about the report. I can also be contacted for arranging construction observation and testing services during the earthwork phase.

Sincerely,
American Engineering Testing, Inc.

A handwritten signature in black ink that appears to read 'Tom James'.

Tom James
Manager – Marshall
Phone: (507) 532-0771
Fax: (507) 532-0776
tjames@amengtest.com
TJ/as

SIGNATURE PAGE

Prepared for:
City of Redwood Falls
333 S. Washington St.
PO Box 526
Redwood Falls, MN 56283

Attn: Mr. James Doering

Prepared by:
American Engineering Testing, Inc.
1603 Halbur Road
Marshall, Minnesota 56258
(507) 532-0771/www.amengtest.com

Authored by:



Bruce W. Card, PE
Senior Engineer

Reviewed by:



Steven J. Ruesink, PE
Manager, Mankato

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under Minnesota Statute Section 326.02 to 326.15

Name: Bruce W. Card

Date: April 15, 2021 License #: 16783

Copyright 2021 American Engineering Testing, Inc.
All Rights Reserved

Unauthorized use or copying of this document is strictly prohibited by anyone other than the client for the specific project.

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- Freezing Weather Effects on Building Construction
- Bituminous Pavement Subgrade Preparation and Design

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- Unified Soil Classification System
- Figure 1 - Project Locations
- Figure 2 - Boring Locations 1-3
- Figure 3 - Boring Locations 4-6
- Subsurface Boring Logs

APPENDIX B – Geotechnical Report Limitations and Guidelines for Use

1.0 INTRODUCTION

You are proposing a SE Development with related infrastructure near Redwood Falls, Minnesota. To assist planning and design, you have authorized American Engineering Testing, Inc. (AET) to conduct a subsurface exploration program at the site, conduct soil laboratory testing, and perform a geotechnical engineering review for the project. This report presents the results of the above services and provides our engineering recommendations based on this data.

2.0 SCOPE OF SERVICES

AET's services were performed according to our proposal to you dated March 5, 202, which was authorized by Mr. Keith Muetzel on the same date. The scope of work consisted of the following:

- Contacting Gopher State One Call to clear utilities
- Six (6) standard penetration test borings to varying depths totaling 185 feet.
- Geotechnical engineering review based on the gained data and preparation of this report.

These services are intended for geotechnical purposes. The scope is not intended to explore for the presence or extent of environmental contamination.

3.0 PROJECT INFORMATION

We understand that you are planning to develop two areas to the southeast of Redwood Falls, Minnesota. One area (borings #1-#3), located to the northeast of the intersection of CSAH 1 and CSAH 24 will be developed for light industrial use and the other area (borings #4-#6), located to the southwest of this same intersection will be developed for mainly residential use. Details regarding the proposed construction were not available at the time of this report, however, we normally associate light to moderate loadings for the anticipated construction. We assume grade increases for structures will be limited to 5 feet. We assume the proposed new streets will be

bituminous mat/aggregate base sections with low traffic volumes and only occasional truck traffic. We understand subsurface utilities including storm sewer, sanitary sewer, and watermains are planned to service the subdivision.

The above stated information represents our understanding of the proposed construction. This information is an integral part of our engineering review. It is important that you contact us if there are changes from that described so that we can evaluate whether modifications to our recommendations are appropriate.

4.0 SUBSURFACE EXPLORATION AND TESTING

4.1 Field Exploration Program

The subsurface exploration program conducted for the project consisted of six (6) standard penetration test borings. The logs of the borings and details of the methods used appear in Appendix A. The logs contain information concerning soil layering, soil classification, geologic description, and moisture condition. Relative density or consistency is also noted for the natural soils, which is based on the standard penetration resistance (N-value).

The approximate boring locations are shown on the Boring Location Maps which are included in Appendix A. The borings were staked by Bolton & Menk personnel prior to our arrival at the site. The elevations at the boring locations were also furnished by Bolton & Menk and are shown on the top of the boring logs included in Appendix A.

4.2 Laboratory Testing

The laboratory test program included moisture content, dry density and unconfined compressive strength testing. The test results appear in Appendix A on the individual boring logs adjacent to the samples upon which they were performed.

5.0 SITE CONDITIONS

5.1 Surface Observations

The proposed project sites are located southeast of Redwood Falls, Minnesota. Nearby site features include mostly farmland. Current site vegetation consists of grass and trees. The topography is rolling with surface elevations for Site 1 ranging from 1001.7' to 1019.6', and Site 2 ranging from 1018.0' to 1031.9'.

5.2 Subsurface Soils/Geology

The site geology consists of topsoil underlain by mostly glacial till with some alluvial deposits.

The surficial topsoil layer was about 1 ½' to 2 ½' deep at the boring locations. The topsoil consisted mostly of black, lean clay with numerous visible organics.

Underlying the surficial deposits, brown sandy lean clay till, brown lean clay or brown sand alluvial deposits were encountered at the boring locations.

The main geologic deposit encountered at the site consisted of clayey sand and sandy lean clay, glacial till. The upper portion of till was somewhat weathered. The till varied in color from brown nearer the surface to gray at depth. Additionally, the till contained some gravel and numerous lenses and layers of sand. The consistency of the till varied from firm to hard.

5.3 Groundwater

Subsurface water was noted as shallow as 5' at boring #1 at the time our field work was performed. The borings were monitored for groundwater seepage during drilling operations and were measured for groundwater accumulation shortly after completion of drilling. Groundwater levels should be expected to fluctuate seasonally and yearly. The time of year that the borings

were drilled, and the history of precipitation prior to drilling, should be known when using the water level information on the soil boring logs to extrapolate water levels at other points in time.

5.4 Review of Soil Properties

5.4.1 Topsoil

The topsoil consisted of black, lean clay with numerous visible organics. The topsoil deposits are judged to be low strength and compressible under anticipated footing loadings.

5.4.2 Till

The till soils consisted of brown to gray, sandy lean clay and clayey sand with a consistency of firm to hard. We judge the till soils to have low to moderate strength and compressibility characteristics. The sandy lean clay and clayey sand are slow-draining soil types that are susceptible to freeze-thaw movements when subject to freezing temperatures.

5.4.3 Fine Alluvium

The N-values recorded in the fine alluvium ranged from 4 to 15 bpf, indicating these soils exhibit soft to stiff consistency. We judge the fine-alluvium to have low to moderate strength and compressibility characteristics. The lean clay with sand is a slow-draining soil type that is susceptible to freeze-thaw movements when subject to freezing temperatures. The moisture content of some of the lean clay soils was well above the optimum moisture content which will make them difficult to work, dry, and recompact if used as backfill.

5.4.4 Coarse Alluvium

Gray, coarse alluvial, silty sand was encountered from 19 ½ feet to 24 ½ feet below the surface at boring 1 and brown, coarse alluvial, sand with silt was encountered from 19½ feet to 29 ½ feet

at boring 3, and 2½ feet to 7 feet at boring 5. The N-values recorded in the coarse alluvium ranged from 8 to 42 bpf, indicating these soils exhibit loose to dense relative density. We judge the coarse alluvium to have low to moderate strength and compressibility characteristics. The dirtier silty sand (SM) alluvial soils observed in our borings have a moderate susceptibility to freeze-thaw movements. The silty sand is a moderate to slow-draining soil type. The cleaner sand with silt alluvial soils (SP-SM) are generally a moderate draining soil type with low susceptibility to freeze-thaw frost movements.

6.0 RECOMMENDATIONS

6.1 Approach Discussion

In order to provide reliable support for structures, we recommend the complete removal and replacement of the existing topsoil with compacted structural fill. The topsoil depth was generally noted to be 2' to 2 ½' at the boring locations. In addition, saturated and soft lean clay soils were encountered in the upper 7' to 8' in borings #1 and #3. These soils will likely not be suitable for direct support of any structures. We recommend that additional soil borings be completed once actual construction plans are developed.

We wish to note that the clay soils encountered at the sites may be sensitive to disturbance and potential strength loss under construction traffic and/or excessive moisture. The soils can lose strength with the combination of additional moisture and construction traffic. Disturbance of these soils should be prohibited. Water should not be allowed to pond on these soils for any length of time.

6.1.2 Fill Placement and Compaction

Fill placed to attain grade should be compacted in thin lifts, such that the entire lift achieves a minimum compaction level of 95 percent of the material's standard maximum dry unit weight per ASTM D698 (Standard Proctor test).

For ease of placement and compaction, we recommend using a granular material with a maximum size of 2" and less than 12% fines. It should be possible to reuse the more granular, on-site non-organic soils as fill.

For a sand fill, we recommend maximum lift thicknesses on the order of 1'. We recommend compacting with a moderately heavy, vibratory compactor.

Any fill placed in or near water should be medium/coarse grained, free draining sand with less than 40% passing the #40 sieve and 5% passing the #200 sieve. Additionally, the initial lift of fill should be about 2' to lessen the risk of disturbing the natural soils present at the site.

6.2 Utility Construction

The proposed sanitary sewer, water main and storm sewer reconstruction within the roadways should encounter suitable natural soil at planned invert levels. It is possible that some softer, waterbearing or disturbed soils may be encountered which may not provide sufficient stability. In this case, some subcutting may be needed to provide proper support. The thickness of the subcut would be dependent on conditions, although we suspect it should not be necessary to subcut more than 1' to 2' below invert. If the instability extends below the 2' subcut depth, further evaluation should be performed. The placement of a geotextile fabric can aid in providing improved stability.

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All subcuts below the pipe/manhole locations should include 1:1 lateral oversizing.

In addition to the subcutting, the trench bottoms should be properly dewatered to reduce the potential for further disturbance and to allow bedding and utility placement. Control of subsurface water in the excavation would be dependent upon the static subsurface water level at the time the trenching is performed and the amount of coarse grained soils which are encountered. It may be possible to control water entering into the excavation with normal sump pumping procedures. If the flow cannot be controlled with normal sump pumping procedures, we suggest considering some method of cutting off the flow through the more pervious sand layers found at the project site. Well pointing or other dewatering systems which could result in lowering the local groundwater table in the general area should be avoided to prevent settlement damage to nearby structures.

Following trenching and subcutting as needed, we recommend the following soil types be used for bedding/ refilling:

- In the case of competent trench bottoms, several inches of granular bedding should be provided for uniform pipe support. Per MN/DOT Specifications 3149.2F, granular bedding material should have no more than 10.5% passing the #200 sieve, and no particles larger than 1”.
- In the case of a special bedding needed to reattain grade after subcuts or for stability reasons, it may be possible to simply use a thicker “granular bedding”, although in this case, we would suggest the use of mostly coarse sand material. In more extreme stability cases, it is preferable that rock bedding be used such as the coarse filter aggregate material designated by MN/DOT Specification 3149.2H. When using a coarser material such as this, which includes larger void space, we feel it is important to envelope the

layer within a geotextile fabric to act as a separator which prevents the intrusion of fines into the rock void space.

Thinner granular bedding should be tamped into place. In those areas where fill thicknesses become on the order of 1' or more due to deeper subcuts, the soils should be compacted to a minimum of 95% of the standard Proctor density (ASTM: D698). In the case where granular bedding is not compactable due to poor stability, rock bedding should be used (which is usually not compacted and tested).

Any bedding which is provided should be interrupted at a minimum of every 500 feet with a clay seal to prevent the transmission of subsurface water.

6.3 Pavements

6.3.1 Definitions

The ensuing sections use the following words or phrases, which have the following definitions:

Top of grading grade is defined as the grade which contacts the bottom of the aggregate base layer.

Sand subbase is a uniform thickness sand layer placed as the top of subgrade (directly below top of grading grade) which is intended to improve the frost and drainage characteristics of the pavement system by better draining excess water in the aggregate base and subbase, by reducing and "bridging" frost heaving, and by reducing spring thaw weakening effects.

Granular Material shall be a pit-run or crusher-run product which shall all pass a 3-inch sieve, and of the portion passing a 1-inch sieve, not more than 10% by weight will pass a #200 sieve and not more than 50% by weight will pass a #40 sieve.

Compaction Subcut is the construction of a uniform thickness subcut below a designated grade to provide uniformity and compaction within the subcut zone. Replacement fill can be the inorganic materials subcut, although the reused soils should be blended to a

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uniform soil condition and re-compacted to at least of 95% of the standard Proctor density (ASTM:D698). Compaction may need to be higher in order to pass a test roll.

Test roll is a means of evaluating the near-surface stability of subgrade soils (usually non-granular). Suitability is determined by the depth of rutting or deflection caused by passage of heavy rubber-tired construction equipment, such as a loaded dump truck, over the test area. Yielding of less than 1-inch is normally considered acceptable, although engineering judgment may be applied depending on equipment used and soil conditions present.

Organic soils are those soils which have sufficient organic content such that engineering properties/stability are affected (generally more than 3% organic content).

6.3.2 Subgrade Preparation

As a background to this section, we refer you to the attached data sheet entitled “Bituminous Pavement Subgrade Preparation and Design,” which presents considerations and recommendations for pavement subgrade preparation. For our pavement design we assume a 7-ton design with less than 400 ADT.

To prepare the subgrade for new pavement, we recommend removing any surface vegetation and root structure. The stability of the exposed clayey sand or sand soils should then be evaluated using a test roll procedure, as described on the attached sheet. Soils found to be unstable should either be moisture conditioned and compacted back into place, or they should be removed and replaced with compacted fill.

The on-site inorganic soils can be used for subgrade fill, although the use of granular materials is preferred. Compaction of new fill supporting pavements should meet the requirements of Mn/DOT Specification 2105.3F1 (Specified Density Method). This specification requires soils placed within the upper 3’ of the subgrade be compacted to a minimum of 100% of the Standard Proctor Density (ASTM:D698). The soil placed below the upper 3’ zone can have a reduced minimum compaction level of 95%.

Sand Subbase

The existing lean clay with sand and sandy lean clay present in the pavement areas have at least moderate frost heave potential and they are moderately slow to slow draining. If sand with silt subgrade soils are exposed at subgrade elevations the sand subbase maybe eliminated. Soil with poor drainage characteristics may lead to trapped water within the upper portion of the subgrade or the aggregate base layer. This condition can accelerate subgrade softening, resulting in alligator cracking, frost distortion and pothole formation.

Improved long-term pavement performance can be achieved by placing a draining sand subbase layer as the top portion of the subgrade where granular materials are not already present. The sand subbase layer will better control infiltrating water, as well as the associated frost movements. Placement of a sand subbase layer will increase initial costs. However, the use of a drained sand subbase should reduce future maintenance; extend the pavement life; and improve constructability. The decision to use a sand subbase should take into consideration the initial costs versus the expected pavement performance.

As a minimum, we recommend using a 1' thick sand subbase in areas where granular soils are not already present at pavement subgrade elevations. Where there is a need to vary the thickness of the subbase, we recommend the thickness have a taper of no steeper than 20:1 (horizontal to vertical). The subcut and sand layer placement should extend slightly beyond the outer edge of the curb/paved edge, in order to maintain frost uniformity.

Sand subbase materials should at least meet the requirement of a Select Granular Borrow per Mn/DOT specification 3149.2B2. This refers to sand containing less than 12% by weight passing the #200 sieve. However, this specification allows for the possibility of a fine grained sand material, which does not necessarily allow for free drainage. Because stability can be

affected by the presence of water, we recommend the use of a Modified Select Granular Borrow, if the project budget allows. This includes material which contains less than 5% by weight passing the #200 sieve and less than 40% by weight passing the #40 sieve. Value engineering judgments of intermediate gradation can also be considered; we are available for review on this issue.

The subbase layer should be provided with a means of subsurface drainage, in order to prevent build up of water within the sand subbase. This can be accomplished by placing “finger drains”, which are segments of properly engineered drainage lines connected to catch basins in low elevation areas. Where grades are relatively level and finger drains are infrequent, consideration should be given to placing a longer parallel drainage line through the level areas, to better remove infiltrating water. Shorter paths to draitile lines should be provided as the subbase materials becomes less permeable. Therefore, less draitile lines will be needed if Modified Select Granular Borrow materials are utilized instead of Select Granular Borrow.

6.3.3 Section Thicknesses

We are presenting pavement designs based on an assumed 7 ton design with less than 400 ADT. The design is intended for pavements which will experience light traffic volumes and occasional truck traffic. Bituminous pavement thickness designs for the on-site clayey sand and for a 1’ thick drained sand subbase place over these soils are provided in the following table B.

Table B – Pavement Thickness Designs

<u>Pavement Material</u>	<u>7-Ton Section w/ sand sub-base</u>	<u>7– Ton Section w/o sand sub-base</u>
Bituminous Wear	1 ½ ”	1 ½ ”
Bituminous Base	2”	2”

<u>Pavement Material</u>	<u>7-Ton Section w/ sand sub-base</u>	<u>7- Ton Section w/o sand sub-base</u>
Aggregate Base (MnDOT Class 5)	5"	8"
Sand Subbase* (MnDOT Select Granular Borrow)	12"	--

Again, since subsurface drainage is critical to long term performance, we recommend providing finger drains or tile lines as previously discussed.

*The sand subbase may be eliminated in areas where sand (SP) or sand with silt (SP-SM) soils are exposed at subgrade elevation.

The above designs could be reduced if the project owner is willing to assume the additional maintenance costs. Also, the site conditions are suited for the use of an engineering fabric and some reduction in the pavement section may be possible depending on the subgrade conditions encountered and the amount of sand subbase provided.

Estimated Subgrade R-Value

No actual R-value testing was conducted to define subgrade soil strength. However, based on our experience we estimate a conservative R-value for the pavement section thickness design of about 10 for the softer clayey sand (SC, AASHTO A-7) present. These soils would have a MnDOT Soil Factor of 120. If you desire additional field and laboratory testing can be performed to better define the R-value for the soils present. Any additional sand provided would increase the estimated R-value or could be accounted for by assigning a granular equivalent (GE) value of about 0.5.

7.0 CONSTRUCTION CONSIDERATIONS

7.1 Potential Difficulties

7.1.1 Runoff Water in Excavation

Water can be expected to collect in the excavation bottom during times of inclement weather or snow melt. To allow observation of the excavation bottom, to reduce the potential for soil disturbance, and to facilitate filling operations, we recommend water be removed from within the excavation during construction. Based on the soils encountered, we anticipate the ground water can be handled with conventional sump pumping.

7.1.2 Disturbance of Soils

The on-site soils can become disturbed under construction traffic, especially if the soils are wet. If soils become disturbed, they should be subcut to the underlying undisturbed soils. The subcut soils can then be dried and recompacted back into place, or they should be removed and replaced with drier imported fill.

7.1.3 Winter Construction

If construction occurs during the winter, it is necessary for the contractor to protect the base soils from freezing each day and each night before new fill is placed. Fill should not be placed over frozen soils, snow, or ice, nor should the use of frozen fill soils be permitted. The contractor must protect base soils from freezing before and after fill placement, and before, during, and after concrete placement. If the interior footings will be exposed to freezing temperatures during construction, we recommend that you consider lowering the footings to protect against frost penetration into the footing subgrade soils. We recommend that a special pre-construction meeting be held to discuss the procedures and precautions that must be followed.

7.2 Excavation Backsloping

If excavation faces are not retained, the excavations should maintain maximum allowable slopes in accordance with *OSHA Regulations (Standards 29 CFR), Part 1926, Subpart P, "Excavations"* (can be found on www.osha.gov). Even with the required OSHA sloping, water seepage or surface runoff can potentially induce sideslope erosion or running which could require slope maintenance.

7.3 Observation and Testing

The recommendations in this report are based on the subsurface conditions found at our test boring locations. Since the soil conditions can be expected to vary away from the soil boring locations, we recommend on-site observation by a geotechnical engineer/technician during construction to evaluate these potential changes. Soil density testing should also be performed on new fill placed in order to document that project specifications for compaction have been satisfied.

8.0 ASTM STANDARDS

When we refer to an ASTM Standard in this report, we mean that our services were performed in general accordance with that standard. Compliance with any other standards referenced within the specified standard is neither inferred nor implied.

9.0 LIMITATIONS

Within the limitations of scope, budget, and schedule, we have endeavored to provide our services according to generally accepted geotechnical engineering practices at this time and location. Other than this, no warranty, either expressed or implied, is intended.

Important information regarding risk management and proper use of this report is given in Appendix B entitled "Geotechnical Report Limitations and Guidelines for Use".

EXCAVATION AND REFILLING FOR STRUCTURAL SUPPORT

EXCAVATION

Excavations for structural support at soil boring locations should be taken to depths recommended in the geotechnical report. Since conditions can vary, recommended excavation depths between and beyond the boring locations should be evaluated by geotechnical field personnel. If ground water is present, the excavation should be dewatered to avoid the risk of unobservable poor soils being left in-place. Excavation base soils may become disturbed due to construction traffic, ground water, or other reasons. Such soils should be subcut to underlying undisturbed soils. Where the excavation base slopes at an angle steeper than 4H:1V, the excavation bottom should be benched across the slope parallel to the slope contour.

Soil stresses under foundations spread out with depth. Therefore, the excavation bottom and subsequent fill system should be laterally oversized beyond foundation edges to support these stresses. A lateral oversize equal to the depth of fill below the foundation (i.e., 1:1 oversize) is usually recommended. The lateral oversize is usually increased to 1.5:1 to 2:1 where compressible organic soils are exposed on the excavation sides. Variations in oversize requirements may be recommended in the geotechnical report or can be evaluated by the geotechnical field personnel.

Unless the excavation is retained, the backslopes should be maintained in accordance with OSHA Regulations (Standards - 29 CFR), Part 1926, Subpart P, "Excavations" (found on www.osha.gov). Even with the required OSHA sloping, ground water can induce sideslope raveling or running which could require that flatter slopes or other approaches be used.

FILLING

Filling should proceed only after the excavation bottom has been approved by the geotechnical engineer/technician. Approved fill material should be uniformly compacted in thin lifts to the compaction levels specified in the geotechnical report. The lift thickness should be thin enough to achieve specified compaction through the full lift thickness with the compaction equipment utilized. Typical thicknesses are 6" to 9" for clays and 12" to 18" for sands. Fine grained soils are moisture sensitive and are often wet (water content exceeds the "optimum water content" defined by a Proctor test). In this case, the soils should be scarified and dried to achieve a water content suitable for compaction. This drying process can be time consuming and labor intensive, and will require favorable weather.

Select fill material may be needed where the excavation bottom is sensitive to disturbance or where standing water is present. Sands (SP) which are medium to coarse grained are preferred, and can be compacted in thicker lift thicknesses than finer grained soils.

Filling operations for structural support should be closely monitored for fill type and compaction by a geotechnical technician. Monitoring should be on a full-time basis in cases where vertical fill placement is rapid; during freezing weather conditions; where ground water is present; or where sensitive bottom conditions are present.

EXCAVATION/REFILLING DURING FREEZING TEMPERATURES

Soils that freeze will heave and lose density. Upon thawing, these soils will not regain their original strength and density. The extent of heave and density loss depends on the soil type and moisture condition; and is most pronounced in clays and silts. Foundations, slabs, and other improvements should be protected from frost intrusion during freezing weather. For earthwork during freezing weather, the areas to be filled should be stripped of frozen soil, snow, and ice prior to new fill placement. In addition, new fill should not be allowed to freeze during or after placement. For this reason, it may be preferable to do earthwork operations in small plan areas so grade can be quickly attained instead of large areas where much frost stripping may be needed.

FREEZING WEATHER EFFECTS ON BUILDING CONSTRUCTION

GENERAL

Because water expands upon freezing and soils contain water, soils which are allowed to freeze will heave and lose density. Upon thawing, these soils will not regain their original strength and density. The extent of heave and density/strength loss depends on the soil type and moisture condition. Heave is greater in soils with higher percentages of fines (silts/clays). High silt content soils are most susceptible, due to their high capillary rise potential which can create ice lenses. Fine grained soils generally heave about 1/4" to 3/8" for each foot of frost penetration. This can translate to 1" to 2" of total frost heave. This total amount can be significantly greater if ice lensing occurs.

DESIGN CONSIDERATIONS

Clayey and silty soils can be used as perimeter backfill, although the effect of their poor drainage and frost properties should be considered. Basement areas will have special drainage and lateral load requirements which are not discussed here. Frost heave may be critical in doorway areas. Stoops or sidewalks adjacent to doorways could be designed as structural slabs supported on frost footings with void spaces below. With this design, movements may then occur between the structural slab and the adjacent on-grade slabs. Non-frost susceptible sands (with less than 12% passing a #200 sieve) can be used below such areas. Depending on the function of surrounding areas, the sand layer may need a thickness transition away from the area where movement is critical. With sand placement over slower draining soils, subsurface drainage would be needed for the sand layer. High density extruded insulation could be used within the sand to reduce frost penetration, thereby reducing the sand thickness needed. We caution that insulation placed near the surface can increase the potential for ice glazing of the surface.

The possible effects of adfreezing should be considered if clayey or silty soils are used as backfill. Adfreezing occurs when backfill adheres to rough surfaced foundation walls and lifts the wall as it freezes and heaves. This occurrence is most common with masonry block walls, unheated or poorly heated building situations and clay backfill. The potential is also increased where backfill soils are poorly compacted and become saturated. The risk of adfreezing can be decreased by placing a low friction separating layer between the wall and backfill.

Adfreezing can occur on exterior piers (such as deck, fence or other similar pier footings), even if a smooth surface is provided. This is more likely in poor drainage situations where soils become saturated. Additional footing embedment and/or widened footings below the frost zones (which include tensile reinforcement) can be used to resist uplift forces. Specific designs would require individual analysis.

CONSTRUCTION CONSIDERATIONS

Foundations, slabs and other improvements which may be affected by frost movements should be insulated from frost penetration during freezing weather. If filling takes place during freezing weather, all frozen soils, snow and ice should be stripped from areas to be filled prior to new fill placement. The new fill should not be allowed to freeze during transit, placement or compaction. This should be considered in the project scheduling, budgeting and quantity estimating. It is usually beneficial to perform cold weather earthwork operations in small areas where grade can be attained quickly rather than working larger areas where a greater amount of frost stripping may be needed. If slab subgrade areas freeze, we recommend the subgrade be thawed prior to floor slab placement. The frost action may also require reworking and recompaction of the thawed subgrade.

BITUMINOUS PAVEMENT SUBGRADE PREPARATION AND DESIGN

GENERAL

Bituminous pavements are considered layered "flexible" systems. Dynamic wheel loads transmit high local stresses through the bituminous/base onto the subgrade. Because of this, the upper portion of the subgrade requires high strength/stability to reduce deflection and fatigue of the bituminous/base system. The wheel load intensity dissipates through the subgrade such that the high level of soil stability is usually not needed below about 2' to 4' (depending on the anticipated traffic and underlying soil conditions). This is the primary reason for specifying a higher level of compaction within the upper subgrade zone versus the lower portion. Moderate compaction is usually desired below the upper critical zone, primarily to avoid settlements/sags of the roadway. However, if the soils present below the upper 3' subgrade zone are unstable, attempts to properly compact the upper 3' zone to the 100% level may be difficult or not possible. Therefore, control of moisture just below the 3' level may be needed to provide a non-yielding base upon which to compact the upper subgrade soils.

Long-term pavement performance is dependent on the soil subgrade drainage and frost characteristics. Poor to moderate draining soils tend to be susceptible to frost heave and subsequent weakening upon thaw. This condition can result in irregular frost movements and "popouts," as well as an accelerated softening of the subgrade. Frost problems become more pronounced when the subgrade is layered with soils of varying permeability. In this situation, the free-draining soils provide a pathway and reservoir for water infiltration which exaggerates the movements. The placement of a well drained sand subbase layer as the top of subgrade can minimize trapped water, smooth frost movements and significantly reduce subgrade softening. In wet, layered and/or poor drainage situations, the long-term performance gain should be significant. If a sand subbase is placed, we recommend it be a "Select Granular Borrow" which meets Mn/DOT Specification 3149.2B2.

PREPARATION

Subgrade preparation should include stripping surficial vegetation and organic soils. Where the exposed soils are within the upper "critical" subgrade zone (generally 2½' deep for "auto only" areas and 3' deep for "heavy duty" areas), they should be evaluated for stability. Excavation equipment may make such areas obvious due to deflection and rutting patterns. Final evaluation of soils within the critical subgrade zone should be done by test rolling with heavy rubber-tired construction equipment, such as a loaded dump truck. Soils which rut or deflect 1" or more under the test roll should be corrected by either subcutting and replacement; or by scarification, drying, and recompaction. Reworked soils and new fill should be compacted per the "Specified Density Method" outlined in Mn/DOT Specification 2105.3F1 (a minimum of 100% of Standard Proctor density in the upper 3' subgrade zone, and a minimum of 95% below this).

Subgrade preparation scheduling can be an important consideration. Fall and Spring seasons usually have unfavorable weather for soil drying. Stabilizing non-sand subgrades during these seasons may be difficult, and attempts often result in compromising the pavement quality. Where construction scheduling requires subgrade preparation during these times, the use of a sand subbase becomes even more beneficial for constructability reasons.

SUBGRADE DRAINAGE

If a sand subbase layer is used, it should be provided with a means of subsurface drainage to prevent water build-up. This can be in the form of draitile lines which dispose into storm sewer systems, or outlets into ditches. Where sand subbase layers include sufficient sloping, and water can migrate to lower areas, draitile lines can be limited to finger drains at the catch basins. Even if a sand layer is not placed, strategically placed draitile lines can aid in improving pavement performance. This would be most important in areas where adjacent non-paved areas slope towards the pavement. Perimeter edge drains can aid in intercepting water which may infiltrate below the pavement.

Appendix A

Geotechnical Field Exploration and Testing
Boring Log Notes
Unified Soil Classification System
Figure 1 - Project Locations
Figure 2 – Boring Locations 1-3
Figure 3 – Boring Locations 4-6
Subsurface Boring Logs

Appendix A
Geotechnical Field Exploration and Testing
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A.1 FIELD EXPLORATION

The subsurface conditions at the site were explored by drilling and sampling three (3) standard penetration test borings. The locations of the borings appear on Figure 2, preceding the Subsurface Boring Logs in this appendix.

A.2 SAMPLING METHODS

A.2.1 Split-Spoon Samples (SS) - Calibrated to N_{60} Values

Standard penetration (split-spoon) samples were collected in general accordance with ASTM: D1586 with one primary modification. The ASTM test method consists of driving a 2-inch O.D. split-barrel sampler into the in-situ soil with a 140-pound hammer dropped from a height of 30 inches. The sampler is driven a total of 18 inches into the soil. After an initial set of 6 inches, the number of hammer blows to drive the sampler the final 12 inches is known as the standard penetration resistance or N-value. Our method uses a modified hammer weight, which is determined by measuring the system energy using a Pile Driving Analyzer (PDA) and an instrumented rod.

In the past, standard penetration N-value tests were performed using a rope and cathead for the lift and drop system. The energy transferred to the split-spoon sampler was typically limited to about 60% of its potential energy due to the friction inherent in this system. This converted energy then provides what is known as an N_{60} blow count.

The most recent drill rigs incorporate an automatic hammer lift and drop system, which has higher energy efficiency and subsequently results in lower N-values than the traditional N_{60} values. By using the PDA energy measurement equipment, we are able to determine actual energy generated by the drop hammer. With the various hammer systems available, we have found highly variable energies ranging from 55% to over 100%. Therefore, the intent of AET's hammer calibrations is to vary the hammer weight such that hammer energies lie within about 60% to 65% of the theoretical energy of a 140-pound weight falling 30 inches. The current ASTM procedure acknowledges the wide variation in N-values, stating that N-values of 100% or more have been observed. Although we have not yet determined the statistical measurement uncertainty of our calibrated method to date, we can state that the accuracy deviation of the N-values using this method is significantly better than the standard ASTM Method.

A.2.2 Disturbed Samples (DS)/Spin-up Samples (SU)

Sample types described as "DS" or "SU" on the boring logs are disturbed samples, which are taken from the flights of the auger. Because the auger disturbs the samples, possible soil layering and contact depths should be considered approximate.

A.2.3 Sampling Limitations

Unless actually observed in a sample, contacts between soil layers are estimated based on the spacing of samples and the action of drilling tools. Cobbles, boulders, and other large objects generally cannot be recovered from test borings, and they may be present in the ground even if they are not noted on the boring logs.

Determining the thickness of "topsoil" layers is usually limited, due to variations in topsoil definition, sample recovery, and other factors. Visual-manual description often relies on color for determination, and transitioning changes can account for significant variation in thickness judgment. Accordingly, the topsoil thickness presented on the logs should not be the sole basis for calculating topsoil stripping depths and volumes. If more accurate information is needed relating to thickness and topsoil quality definition, alternate methods of sample retrieval and testing should be employed.

A.3 CLASSIFICATION METHODS

Soil descriptions shown on the boring logs are based on the Unified Soil Classification (USC) system. The USC system is described in ASTM: D2487 and D2488. Where laboratory classification tests (sieve analysis or Atterberg Limits) have been performed, accurate classifications per ASTM: D2487 are possible. Otherwise, soil descriptions shown on the boring logs are visual-manual judgments. Charts are attached which provide information on the USC system, the descriptive terminology, and the symbols used on the boring logs.

Visual-manual judgment of the AASHTO Soil Group is also noted as a part of the soil description. A chart presenting details of the AASHTO Soil Classification System is also attached.

Appendix A
Geotechnical Field Exploration and Testing
Report No. 13-20780

The boring logs include descriptions of apparent geology. The geologic depositional origin of each soil layer is interpreted primarily by observation of the soil samples, which can be limited. Observations of the surrounding topography, vegetation, and development can sometimes aid this judgment.

A.4 WATER LEVEL MEASUREMENTS

The ground water level measurements are shown at the bottom of the boring logs. The following information appears under “Water Level Measurements” on the logs:

- ♦ Date and Time of measurement
- ♦ Sampled Depth: lowest depth of soil sampling at the time of measurement
- ♦ Casing Depth: depth to bottom of casing or hollow-stem auger at time of measurement
- ♦ Cave-in Depth: depth at which measuring tape stops in the borehole
- ♦ Water Level: depth in the borehole where free water is encountered
- ♦ Drilling Fluid Level: same as Water Level, except that the liquid in the borehole is drilling fluid

The true location of the water table at the boring locations may be different than the water levels measured in the boreholes. This is possible because there are several factors that can affect the water level measurements in the borehole. Some of these factors include: permeability of each soil layer in profile, presence of perched water, amount of time between water level readings, presence of drilling fluid, weather conditions, and use of borehole casing.

A.5 LABORATORY TEST METHODS

A.5.1 Water Content Tests

Conducted per AET Procedure 01-LAB-010, which is performed in general accordance with ASTM: D2216 and AASHTO: T265.

A.5.2 Atterberg Limits Tests

Conducted per AET Procedure 01-LAB-030, which is performed in general accordance with ASTM: D4318 and AASHTO: T89, T90.

A.5.3 Sieve Analysis of Soils (thru #200 Sieve)

Conducted per AET Procedure 01-LAB-040, which is performed in general conformance with ASTM: D6913, Method A.

A.5.4 Particle Size Analysis of Soils (with hydrometer)

Conducted per AET Procedure 01-LAB-050, which is performed in general accordance with ASTM: D422 and AASHTO: T88.

A.5.5 Unconfined Compressive Strength of Cohesive Soil

Conducted per AET Procedure 01-LAB-080, which is performed in general accordance with ASTM: D2166 and AASHTO: T208.

A.5.6 Laboratory Soil Resistivity using the Wenner Four-Electrode Method

Conducted per AET Procedure 01-LAB-090, which is performed using Soil Box apparatus in the laboratory in general accordance with ASTM: G57

A.6 TEST STANDARD LIMITATIONS

Field and laboratory testing is done in general conformance with the described procedures. Compliance with any other standards referenced within the specified standard is neither inferred nor implied.

A.7 SAMPLE STORAGE

Unless notified to do otherwise, we routinely retain representative samples of the soils recovered from the borings for a period of 30 days.

BORING LOG NOTES

DRILLING AND SAMPLING SYMBOLS

Symbol	Definition
AR:	Sample of material obtained from cuttings blown out the top of the borehole during air rotary procedure.
B, H, N:	Size of flush-joint casing
CAS:	Pipe casing, number indicates nominal diameter in inches
COT:	Clean-out tube
DC:	Drive casing; number indicates diameter in inches
DM:	Drilling mud or bentonite slurry
DR:	Driller (initials)
DS:	Disturbed sample from auger flights
DP:	Direct push drilling; a 2.125 inch OD outer casing with an inner 1½ inch ID plastic tube is driven continuously into the ground.
FA:	Flight auger; number indicates outside diameter in inches
HA:	Hand auger; number indicates outside diameter
HSA:	Hollow stem auger; number indicates inside diameter in inches
LG:	Field logger (initials)
MC:	Column used to describe moisture condition of samples and for the ground water level symbols
N (BPF):	Standard penetration resistance (N-value) in blows per foot (see notes)
NQ:	NQ wireline core barrel
PQ:	PQ wireline core barrel
RDA:	Rotary drilling with compressed air and roller or drag bit.
RDF:	Rotary drilling with drilling fluid and roller or drag bit
REC:	In split-spoon (see notes), direct push and thin-walled tube sampling, the recovered length (in inches) of sample. In rock coring, the length of core recovered (expressed as percent of the total core run). Zero indicates no sample recovered.
SS:	Standard split-spoon sampler (steel; 1.5" is inside diameter; 2" outside diameter); unless indicated otherwise
SU	Spin-up sample from hollow stem auger
TW:	Thin-walled tube; number indicates inside diameter in inches
WASH:	Sample of material obtained by screening returning rotary drilling fluid or by which has collected inside the borehole after "falling" through drilling fluid
WH:	Sampler advanced by static weight of drill rod and hammer
WR:	Sampler advanced by static weight of drill rod
94mm:	94 millimeter wireline core barrel
▼:	Water level directly measured in boring
▽:	Estimated water level based solely on sample appearance

TEST SYMBOLS

Symbol	Definition
CONS:	One-dimensional consolidation test
DEN:	Dry density, pcf
DST:	Direct shear test
E:	Pressuremeter Modulus, tsf
HYD:	Hydrometer analysis
LL:	Liquid Limit, %
LP:	Pressuremeter Limit Pressure, tsf
OC:	Organic Content, %
PERM:	Coefficient of permeability (K) test; F - Field; L - Laboratory
PL:	Plastic Limit, %
q _p :	Pocket Penetrometer strength, tsf (<u>approximate</u>)
q _c :	Static cone bearing pressure, tsf
q _u :	Unconfined compressive strength, psf
R:	Electrical Resistivity, ohm-cms
RQD:	Rock Quality Designation of Rock Core, in percent (aggregate length of core pieces 4" or more in length as a percent of total core run)
SA:	Sieve analysis
TRX:	Triaxial compression test
VSR:	Vane shear strength, remolded (field), psf
VSU:	Vane shear strength, undisturbed (field), psf
WC:	Water content, as percent of dry weight
%-200:	Percent of material finer than #200 sieve

STANDARD PENETRATION TEST NOTES

(Calibrated Hammer Weight)

The standard penetration test consists of driving a split-spoon sampler with a drop hammer (calibrated weight varies to provide N₆₀ values) and counting the number of blows applied in each of three 6" increments of penetration. If the sampler is driven less than 18" (usually in highly resistant material), permitted in ASTM: D1586, the blows for each complete 6" increment and for each partial increment is on the boring log. For partial increments, the number of blows is shown to the nearest 0.1' below the slash.

The length of sample recovered, as shown on the "REC" column, may be greater than the distance indicated in the N column. The disparity is because the N-value is recorded below the initial 6" set (unless partial penetration defined in ASTM: D1586 is encountered) whereas the length of sample recovered is for the entire sampler drive (which may even extend more than 18").

UNIFIED SOIL CLASSIFICATION SYSTEM
ASTM Designations: D 2487, D2488

**AMERICAN
ENGINEERING
TESTING, INC.**



Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A		Soil Classification			
		Group Symbol	Group Name ^B		
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well graded gravel ^F
			$Cu < 4$ and/or $1 > Cc > 3$ ^E	GP	Poorly graded gravel ^F
	Sands 50% or more of coarse fraction passes No. 4 sieve	Gravels with Fines more than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F,G,H}
			Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}
	Sands with Fines more than 12% fines ^D	Clean Sands Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E	SW	Well-graded sand ^I
			$Cu < 6$ and/or $1 > Cc > 3$ ^E	SP	Poorly-graded sand ^I
Fine-Grained Soils 50% or more passes the No. 200 sieve (see Plasticity Chart below)	Silt and Clays Liquid limit less than 50	inorganic	$PI > 7$ and plots on or above "A" line ^J	CL	Lean clay ^{K,L,M}
			$PI < 4$ or plots below "A" line ^J	ML	Silt ^{K,L,M}
	Silt and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}
			PI plots below "A" line	MH	Elastic silt ^{K,L,M}
		organic	Liquid limit – oven dried < 0.75 Liquid limit – not dried	OL	Organic clay ^{K,L,M,N} Organic silt ^{K,L,M,O}
				OH	Organic clay ^{K,L,M,P} Organic silt ^{K,L,M,Q}
Highly organic soil		Primarily organic matter, dark in color, and organic in odor	PT	Peat ^R	

Notes

^ABased on the material passing the 3-in (75-mm) sieve.

^BIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^CGravels with 5 to 12% fines require dual symbols:
 GW-GM well-graded gravel with silt
 GW-GC well-graded gravel with clay
 GP-GM poorly graded gravel with silt
 GP-GC poorly graded gravel with clay

^DSands with 5 to 12% fines require dual symbols:
 SW-SM well-graded sand with silt
 SW-SC well-graded sand with clay
 SP-SM poorly graded sand with silt
 SP-SC poorly graded sand with clay

^E $Cu = D_{60} / D_{10}$, $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

^FIf soil contains $\geq 15\%$ sand, add "with sand" to group name.

^GIf fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^HIf fines are organic, add "with organic fines" to group name.

^IIf soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^JIf Atterberg limits plot is hatched area, soils is a CL-ML silty clay.

^KIf soil contains 15 to 29% plus No. 200 add "with sand" or "with gravel", whichever is predominant.

^LIf soil contains $\geq 30\%$ plus No. 200, predominantly sand, add "sandy" to group name.

^MIf soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

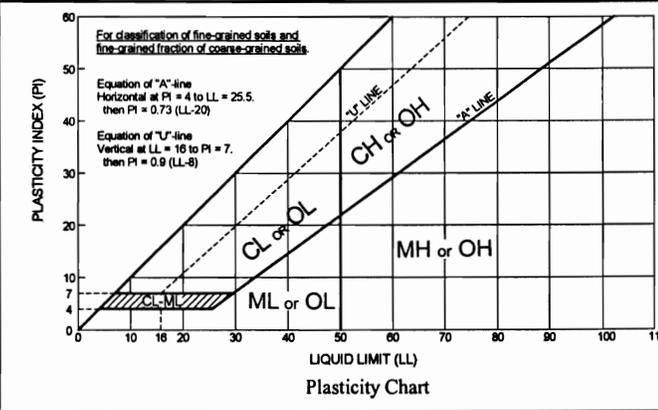
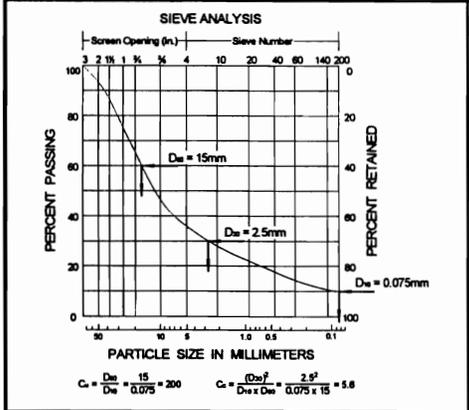
^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

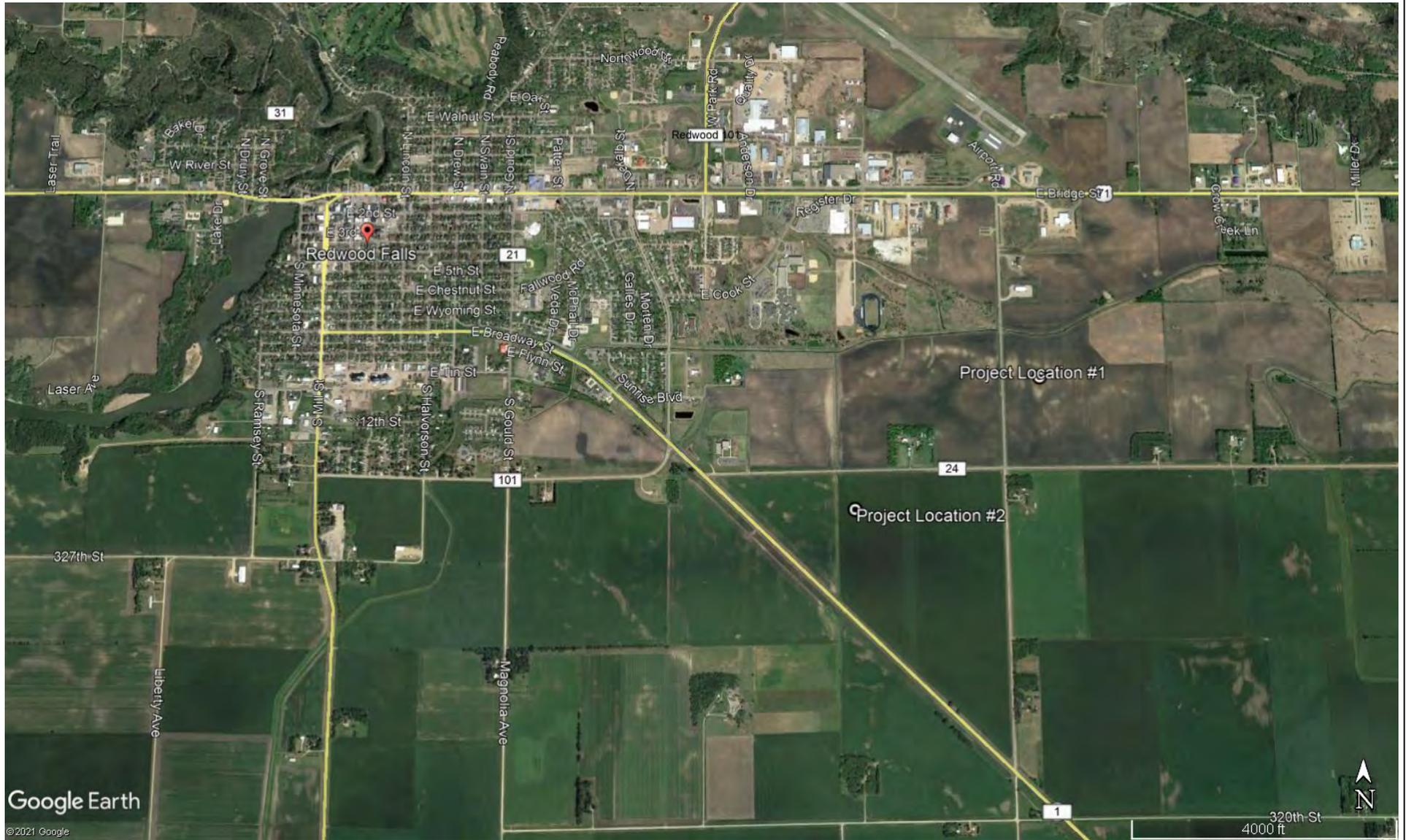
^Q PI plots below "A" line.

^RFiber Content description shown below.

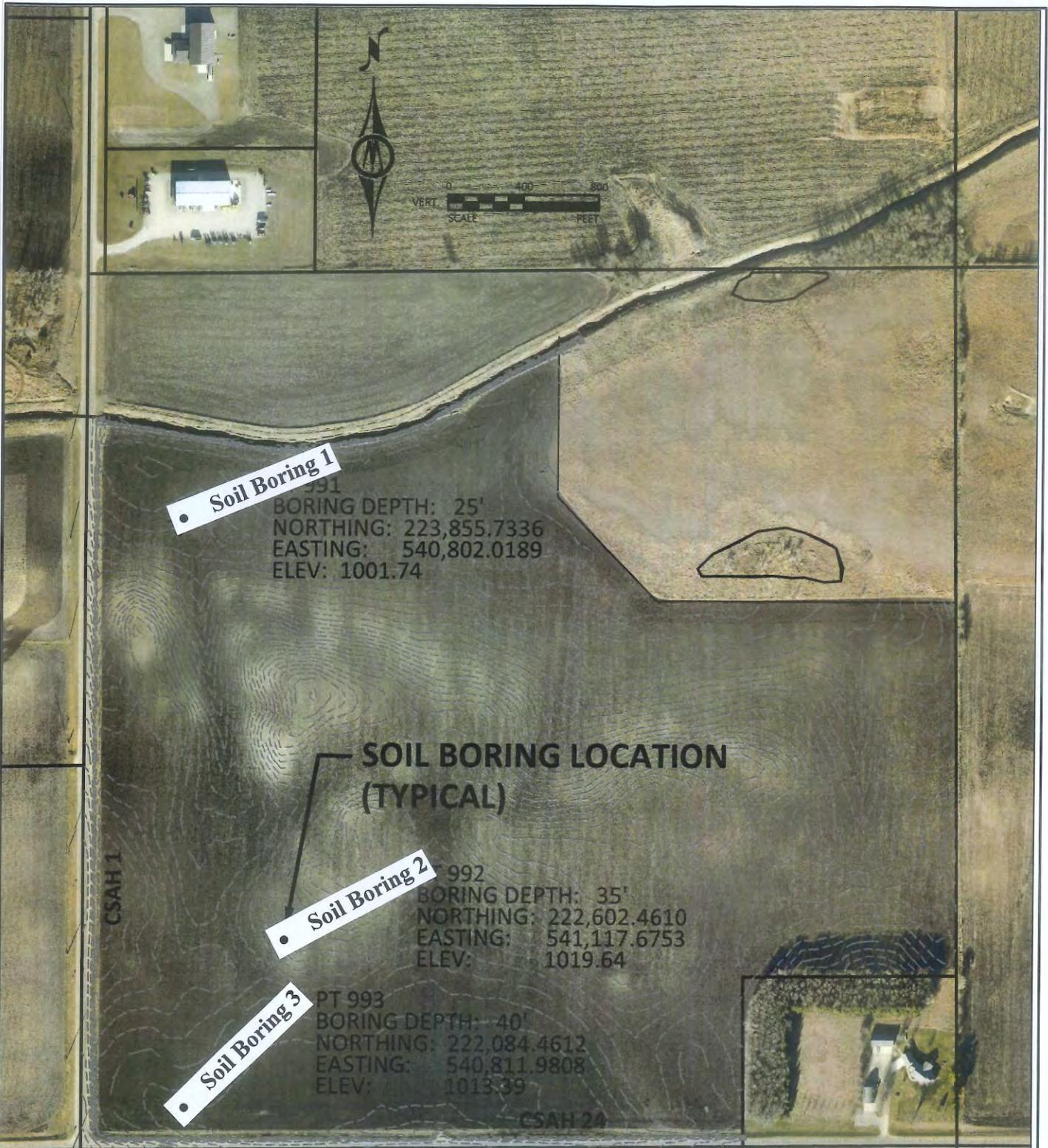


ADDITIONAL TERMINOLOGY NOTES USED BY AET FOR SOIL IDENTIFICATION AND DESCRIPTION

Grain Size		Gravel Percentages		Consistency of Plastic Soils		Relative Density of Non-Plastic Soils	
Term	Particle Size	Term	Percent	Term	N-Value, BPF	Term	N-Value, BPF
Boulders	Over 12"	A Little Gravel	3% - 14%	Very Soft	less than 2	Very Loose	0 - 4
Cobbles	3" to 12"	With Gravel	15% - 29%	Soft	2 - 4	Loose	5 - 10
Gravel	#4 sieve to 3"	Gravelly	30% - 50%	Firm	5 - 8	Medium Dense	11 - 30
Sand	#200 to #4 sieve			Stiff	9 - 15	Dense	31 - 50
Fines (silt & clay)	Pass #200 sieve			Very Stiff	16 - 30	Very Dense	Greater than 50
				Hard	Greater than 30		
Moisture/Frost Condition (MC Column)		Layering Notes		Peat Description		Organic Description (if no lab tests)	
D (Dry):	Absence of moisture, dusty, dry to touch.	Laminations:	Layers less than 1/2" thick of differing material or color.	Term	Fiber Content (Visual Estimate)	Soils are described as <i>organic</i> , if soil is not peat and is judged to have sufficient organic fines content to influence the Liquid Limit properties. <i>Slightly organic</i> used for borderline cases.	
M (Moist):	Damp, although free water not visible. Soil may still have a high water content (over "optimum").	Lenses:	Pockets or layers greater than 1/2" thick of differing material or color.	Fibric Peat:	Greater than 67%	Root Inclusions	
W (Wet/Waterbearing):	Free water visible intended to describe non-plastic soils. Waterbearing usually relates to sands and sand with silt.			Hemic Peat:	33 - 67%	With roots: Judged to have sufficient quantity of roots to influence the soil properties.	
F (Frozen):	Soil frozen			Sapric Peat:	Less than 33%	Trace roots: Small roots present, but not judged to be in sufficient quantity to significantly affect soil properties.	



	Project	Proposed SE Development Redwood Falls, MN	Subject:	Project Locations	AET Job No:	13-20780	Date:	April 14, 2021
	Scale:	As shown above	Drawn By:	AS	Checked By:	TJ	Figure	1



Project: Proposed SE Development
 Redwood Falls, MN

AET Job No. 13-20780

Subject: Boring Locations 1-3

Date: April 15, 2021

Scale: NTS

Drawn By: BMI

Checked By: TJ

Figure: 2



Project: Proposed SE Development
Redwood Falls, MN

AET Job No. 13-20780

Subject: Boring Locations 4-6

Date: April 15, 2021

Scale: NTS

Drawn By: BMI

Checked By: TJ

Figure: 3



SUBSURFACE BORING LOG

AET No: 13-20780

Log of Boring No. 1 (p. 1 of 1)

Project: Proposed SE Development; Redwood Falls, Minnesota

DEPTH IN FEET	Surface Elevation <u>1001.7</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
							WC	DEN	LL	PL	%-#200	
1	LEAN CLAY with SAND and a little gravel and traces of roots, black	TOPSOIL		M	BULK							
2												
3	LEAN CLAY with SAND, brown, firm to soft (CL)	FINE ALLUVIUM	5	M	SS	3	28					
4												
5												
6												
7	LEAN CLAY with SAND, gray, firm to stiff (CL)		7	M	SS	10	28					
8												
9												
10												
11												
12	CLAYEY SAND with a little gravel, gray, very stiff to hard (SC)	TILL	26	M	SS	10	13					
13												
14												
15												
16	SILTY SAND, gray, dense (SM) waterbearing	COARSE ALLUVIUM	32	W	SS	10						
17												
18												
19												
20												
21	SANDY LEAN CLAY with a little gravel, gray, firm (CL)	TILL	6	M	SS	12	15					
22												
23	END OF BORING											
24												
25												

AET_CORP 13-20780 SOIL EXPLORATION, REDWOOD FALLS, GPJ, AET+CPT+WELL.GDT 4/15/21

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-26'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		4/1/21		21.0'	19.5'	-	-	16.1'	
		4/2/21		26.0'	-	8.6'	-	5.0'	
BORING COMPLETED: 4/1/21									
DR: BK LG: AK Rig: 4									



SUBSURFACE BORING LOG

AET No: **13-20780**

Log of Boring No. **2 (p. 1 of 1)**

Project: **Proposed SE Development; Redwood Falls, Minnesota**

DEPTH IN FEET	Surface Elevation 1019.6 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS							
							WC	DEN	LL	PL	%-#200			
1	LEAN CLAY with SAND with a little gravel, black, traces of roots	TOPSOIL		M	BULK									
2	SANDY LEAN CLAY with a little gravel, brown and gray, stiff to firm (CL)	TILL	9	M	SS	12	25							
3			5	M	SS	10	25							
4			10	M	SS	16	23							
5			10	M	SS	14	23							
6			9	M	SS	16	24							
7			30	M	SS	16								
8	SANDY LEAN CLAY with a little gravel, brown, stiff to hard (CL)				TW									
9			19											
10			20	90/5"	M	SS	14	8						
11			25	50/5"	M	SS	6							
12			31	62	M	SS	14	9						
13	CLAYEY SAND with a little gravel, gray, hard (SC)		42	M	SS	18								
14														
15														
16	36													
17	END OF BORING													

AET_CORP 13-20780 SOIL EXPLORATION, REDWOOD FALLS, GPJ, AET+CPT+WELL.GDT 4/15/21

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-36'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		4/1/21		36.0'	34.5'	-	-	19.7'	
		4/1/21		36.0'	-	33.7'	-	19.1'	
BORING COMPLETED: 4/1/21									
DR: BK LG: AK Rig: 4									



SUBSURFACE BORING LOG

AET No: **13-20780**

Log of Boring No. **3 (p. 1 of 1)**

Project: **Proposed SE Development; Redwood Falls, Minnesota**

DEPTH IN FEET	Surface Elevation 1013.4 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS								
							WC	DEN	LL	PL	%-#200				
1	LEAN CLAY with SAND and a little gravel, black, traces of roots	TOPSOIL		M	BULK										
2	LEAN CLAY with SAND, brown, soft (CL)	FINE ALLUVIUM	4	M	SS	10	26								
3															
4															
5															
6															
7															
8															SANDY LEAN CLAY with a little gravel, gray, stiff (CL)
9															
10	SANDY LEAN CLAY with a little gravel, brown and gray, stiff (CL)														
11	CLAYEY SAND with a little gravel, gray, stiff (SC)		12	M	SS	14	21								
12															
13															
14															
15	SAND with SILT and gravel, fine to medium grained, gray, loose to dense (SP-SM) waterbearing	COARSE ALLUVIUM	8	W	SS	6									
20															
21															
22															
23															
24															
25															
26															
27															
28	SANDY LEAN CLAY with a little gravel, gray, hard (CL)	TILL	67	M	SS	10									
30															
31															
32	END OF BORING		48	M	SS	8									
33															
34															
35															
36															
37															
38															
39															
40															
41															

AET_CORP 13-20780 SOIL EXPLORATION, REDWOOD FALLS, GPJ, AET+CPT+WELL.GDT 4/15/21

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-41'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		4/1/21		21.0'	19.5'	-	-	15.5'	
		4/1/21		41.0'	39.5'	39.5'	-	9.0'	
BORING COMPLETED: 4/1/21									
DR: BK LG: AK Rig: 4									



SUBSURFACE BORING LOG

AET No: **13-20780**

Log of Boring No. **4 (p. 1 of 1)**

Project: **Proposed SE Development; Redwood Falls, Minnesota**

DEPTH IN FEET	Surface Elevation 1026.7 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	LEAN CLAY with SAND and a little gravel, black, traces of roots	TOPSOIL		M	BULK						
2	SANDY LEAN CLAY with a little gravel, brown, firm to stiff (CL)	TILL	7	M	SS	12	22				
3			8	M	SS	14	22				
4			14	M	SS	16	23				
5			11	M	SS	14					
6			13	M	SS	16	23				
7			10	M	SS	2					
8											
9											
10											
11											
12	SANDY LEAN CLAY with a little gravel, brown and gray, stiff (CL)		13	M	SS	16	23				
13	SANDY LEAN CLAY with a little gravel, gray, firm to hard (CL)		10	M	SS	2					
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35	SILTY SAND, gray, very dense (SM) waterbearing	MIXED ALLUVIUM	50/2"	W	SS	2					
36	END OF BORING										

AET_CORP 13-20780 SOIL EXPLORATION, REDWOOD FALLS, GPJ, AET+CPT+WELL.GDT 4/15/21

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-36'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		4/2/21		36.0'	34.5'	-	-	26.3'	
		4/2/21		36.0'	34.5'	-	-	None	
BORING COMPLETED: 4/2/21									
DR: BK LG: AK Rig: 4									



SUBSURFACE BORING LOG

AET No: **13-20780**

Log of Boring No. **5 (p. 1 of 1)**

Project: **Proposed SE Development; Redwood Falls, Minnesota**

DEPTH IN FEET	Surface Elevation 1018.0 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	LEAN CLAY with SAND and a little gravel, black, traces of roots	TOPSOIL		M	BULK						
2											
3	SAND with SILT, fine to medium grained, brown, loose to medium dense (SP-SM)	COARSE ALLUVIUM	8	M	SS	6					
4											
5			14	W	SS	10					
6											
7	SANDY LEAN CLAY with a little gravel, gray, firm to hard (CL)	TILL		M	SS	18	22				
8											
9											
10											
11											
12											
13				M	SS	18	21				
14											
15				M	SS	18	22				
16											
17											
18											
19											
20			50'5"		SS	8	16				
21											
22											
23											
24											
25											
26	END OF BORING		92'5"	M	SS	18					

AET_CORP 13-20780 SOIL EXPLORATION, REDWOOD FALLS, GPJ, AET+CPT+WELL.GDT 4/15/21

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-26'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		4/2/21		26.0'	24.5'	24.6'	-	20.1'	
BORING COMPLETED: 4/2/21									
DR: BK LG: AK Rig: 4									



SUBSURFACE BORING LOG

AET No: 13-20780

Log of Boring No. 6 (p. 1 of 1)

Project: Proposed SE Development; Redwood Falls, Minnesota

DEPTH IN FEET	Surface Elevation <u>1031.9</u> MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	LEAN CLAY with SAND and a little gravel, black, traces of roots	TOPSOIL		M	BULK						
2	SANDY LEAN CLAY with a little gravel, brown, firm to stiff (CL)	TILL	8	M	SS	16	18				
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20	SANDY LEAN CLAY with a little gravel, gray, stiff (CL)		50/5"	M	SS	6	20				
21				M	SS	16	24				
22											
23											
24											
25				M	SS	18	22				
26											
26	END OF BORING										

AET_CORP 13-20780 SOIL EXPLORATION, REDWOOD FALLS, GPJ, AET+CPT+WELL.GDT 4/15/21

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-26'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		4/2/21		26.0'	24.5'	24.5'	-	None	
BORING COMPLETED: 4/2/21									
DR: BK LG: AK Rig: 4									

Appendix B

Geotechnical Report Limitations and Guidelines for Use

Appendix B

Geotechnical Report Limitations and Guidelines for Use

Report No. 13-20780

B.1 REFERENCE

This appendix provides information to help you manage your risks relating to subsurface problems which are caused by construction delays, cost overruns, claims, and disputes. This information was developed and provided by GBA¹, of which, we are a member firm.

B.2 RISK MANAGEMENT INFORMATION

B.2.1 Understand the Geotechnical Engineering Services Provided for this Report

Geotechnical engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical engineering services is typically a geotechnical engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

B.2.2 Geotechnical Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client.

Likewise, geotechnical engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. If you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

¹ Geoprofessional Business Association, 1300 Piccard Drive, LL14, Rockville, MD 20850
Telephone: 301/565-2733; www.geoprofessional.org, 2019

Appendix B

Geotechnical Report Limitations and Guidelines for Use

Report No. 13-20780

B.2.3 Read the Full Report

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. Read and refer to the report in full.

B.2.4 You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site’s size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, always inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

B.2.5 Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site’s subsurface using various sampling and testing procedures. Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

B.2.6 This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations only after observing actual subsurface conditions exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.

B.2.7 This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals’ plans and specifications; and
- be available whenever geotechnical engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

B.2.8 Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical engineering report, along with any attachments or appendices, with your contract documents, but be certain to note conspicuously that you’ve included the material for information purposes only. To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about

Appendix B

Geotechnical Report Limitations and Guidelines for Use

Report No. 13-20780

specific project requirements, including options selected from the report, only from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and be sure to allow enough time to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

B.2.9 Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

B.2.10 Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical engineering study. For that reason, a geotechnical engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Unanticipated subsurface environmental problems have led to project failures. If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

B.2.11 Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer’s services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. Geotechnical engineers are not building-envelope or mold specialists.

Phase I Environmental Site Assessment

325 Acre – Proposed Redwood Falls Residential Development
Parcel Number 62-008-2020 and
Part of Parcel Number 62-005-4020
Redwood Falls, Minnesota

Prepared For

Bolton & Menk, Inc.

City of Redwood Falls

June 3, 2020

Project B2004585

Mr. Owen Todd
Bolton & Menk, Inc.
1960 Premier Drive
Mankato, MN 56001

Re: Phase I Environmental Site Assessment
325 Acre – Proposed Redwood Falls Residential Development
Parcel Number 62-008-2020 and
Part of Parcel Number 62-005-4020
Redwood Falls, Minnesota

Dear Mr. Todd:

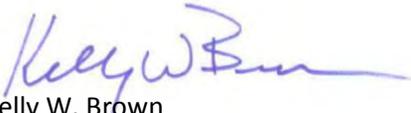
In accordance with your written authorization, Braun Intertec Corporation conducted a Phase I Environmental Site Assessment (ESA) of the above-referenced site (Site). The objective of the Phase I ESA was to evaluate the Site for indications of recognized environmental conditions and to assist in satisfying All Appropriate Inquiries (AAI) standards and practices. The Phase I ESA was conducted in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E1527-13 and 40 Code of Federal Regulations (CFR) Part 312.

The Phase I ESA was prepared on behalf of, and for use by Bolton & Menk, Inc. and the City of Redwood Falls. No other party has a right to rely on the contents of the Phase I ESA without written authorization by Braun Intertec. The Phase I ESA was prepared in association with the acquisition and redevelopment of the Site. Please refer to the attached report for the scope, methods and conclusions of our assessment.

We appreciate the opportunity to provide our professional services for you for this project. If you have any questions regarding this letter or the attached report, please contact Kelly Brown at 952.995.2614 or James Stephan at 952.995.2676.

Sincerely,

BRAUN INTERTEC CORPORATION


Kelly W. Brown
Senior Scientist


James E. Stephan
Group Manager, Senior Scientist

Attachment:
Phase I Environmental Site Assessment Report

AA/EOE

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Executive Summary

Braun Intertec Corporation conducted a Phase I Environmental Site Assessment (ESA) of the 325 acre property described by the Redwood County Property Identification Number (PIN) 62-008-2020 and part of PIN 62-005-4020, and located in Redwood Falls, Minnesota (Site) in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E1527-13 and 40 Code of Federal Regulations (CFR) Part 312.

At the time of this assessment, the Site consisted of one approximately 209 acre parcel (PIN 62-008-2020) located in the southwest quadrant of the intersection of County Road 24 and County Road 1 and a 116 acre part of a larger parcel (PIN 62-005-4020) located in the northeast quadrant of County Road 24 and County Road 1. Both parcels were developed as cultivated cropland; no structures were present. Our research has revealed that the Site has been developed as cultivated cropland since at least 1950.

The surrounding area has been developed for farmstead and cultivated cropland since at least 1950. A railroad track was located along the southwest side of State Highway 67 from at least 1950 through 1982.

This assessment identified no recognized environmental conditions, controlled recognized environmental conditions, or historical recognized environmental conditions in connection with the Site.

A. Introduction

A.1. Purpose

Braun Intertec Corporation received authorization from Bolton & Menk, Inc. (Client) to conduct a Phase I Environmental Site Assessment (ESA) of the 325 acre property described by the Redwood County Property Identification Number 62-008-2020 and part of 62-005-4020 and located in Redwood Falls, Minnesota (Site). The objective of the Phase I ESA was to evaluate the Site for indications of recognized environmental conditions and to assist in satisfying All Appropriate Inquiries (AAI) standards and practices. The Phase I ESA was conducted in general conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Practice E1527-13 and 40 Code of Federal Regulations (CFR) Part 312. No intentional deviations from the ASTM Practice E1527-13 were made in conducting this Phase I ESA for the Site. The Phase I ESA was prepared on behalf of, and for the use by Bolton & Menk, Inc. and the City of Redwood Falls (collectively the User) in accordance with the contract between Bolton & Menk, Inc. and Braun Intertec, including the Braun Intertec General Conditions. No other party has a right to rely on the contents of the Phase I ESA without written authorization by Braun Intertec. All authorized parties are entitled to rely on the attached report according to our contract with Client, and under the same terms, conditions and circumstances. Please note that our contract with Client may contain a limitation of our total liability. If so, such limitation also applies to all those receiving this permission.

According to the User, the Phase I ESA was conducted in association with the acquisition and redevelopment of the Site.

The purpose of this Phase I ESA was to evaluate the Site for indications of “recognized environmental conditions.” A recognized environmental condition is defined by ASTM Practice E1527-13 as: “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment, or 3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.”

In addition, a “controlled recognized environmental condition” is also a recognized environmental condition. A controlled recognized environmental condition is defined by ASTM Practice E1527-13 as “a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.”

A.2. Scope of Services

Services provided for this project included:

- Preparing a description of the Site location, current use and improvements, and surrounding area.
- Preparing a general description of the topography, soils, geology, and groundwater flow direction at the Site.
- Reviewing reasonably ascertainable and practically reviewable regulatory information published by state and federal agencies, health, and/or environmental agencies.
- Reviewing the history of the Site, including aerial photographs, fire insurance maps, directories, and other readily available Site development data.
- Conducting a reconnaissance and environmental review of the Site, including observations of the Site for indications of hazardous materials, petroleum products, polychlorinated biphenyls (PCBs), wells, storage tanks, solid waste disposal, pits and sumps, and utilities.
- Conducting an area reconnaissance, including a brief review of adjoining property uses and pertinent environmental information noted in the Site vicinity.
- Interviewing current owners and/or occupants of the Site and accessible past Site owners, operators and/or occupants, as available.
- Interviewing local government officials or agencies having jurisdiction over hazardous waste disposal or other environmental matters in the area of the Site, as available.
- Reviewing previous environmental reports prepared for the Site, if provided.
- Preparing a written report of our methods, results, and conclusions.

The Standard Scope of the ASTM Practice E1527-13 is not intended to provide a universal analysis of potential environmental risks and hazards. This assessment included no analysis of non-standard scope environmental risks and hazards unless otherwise listed above. Analysis of other non-standard scope issues by Braun Intertec would require additional contractual arrangements.

This assessment does not include vapor encroachment screening as defined in ASTM Practice E2600-10, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*. ASTM Practice E2600-10 is not a requirement or component of “all appropriate inquiry,” but a tool for evaluating vapor migration. Its results are not determinative of whether hazardous substances from a release are or may be present at the property for the sake of “all appropriate inquiry” or ASTM Practice E1527-13. An ASTM Practice E2600-10 vapor encroachment screen is not within the scope of this Phase I ESA and will not be conducted unless specifically requested by the User. However, vapors present or likely present from hazardous substances or petroleum products are considered no differently than hazardous substances or petroleum products present or likely present as a result of a release to the environment. Therefore, while a vapor encroachment screening per the ASTM Practice E2600-10 standard is not part of this assessment, the potential for impacts to the property from vapor migration that is a result of a release of hazardous substances and/or petroleum products to the environment will be considered when assessing for the presence of a recognized environmental condition as defined by ASTM E1527-13.

A.3. User-Provided Information

The purpose of this section is to describe tasks to be performed by the “User.” The “User” as defined by ASTM Practice E1527-13, is “the party seeking to use ASTM Practice E1527-13 to complete an environmental site assessment of the property. A User may include, without limitation, a potential purchaser of property, a potential tenant of property, an owner of property, a lender, or a property manager.”

As stated in 40 CFR 312 (the rule), the Brownfields Amendments provide important liability protections for Users who qualify as contiguous property owners, bona fide prospective purchasers, or innocent landowners. To meet the statutory requirements for any of these Landowner Liability Protections (LLPs), a User must meet certain threshold requirements and satisfy certain continuing obligations. To qualify as one of the three LLPs, the User must perform “all appropriate inquiries” (AAI) on or before the date on which the User acquired the Site. The rule defines AAI, which includes inquiries and activities performed by the User and an environmental professional (EP).

The rule allows (but does not mandate) the User performing AAI to conduct inquiries or activities that may include searches for environmental liens, assessments of any specialized knowledge on the part of the User, an assessment of commonly known or reasonably ascertainable information about the Site, and an assessment of the relationship of the purchase price to fair market value. However, if the User performing AAI conducts one or more of these inquiries and/or activities, the rule allows (but does not mandate) that the User may communicate information gathered from these inquiries and/or activities to their EP to identify a possible recognized environmental condition.

Braun Intertec provided a User Questionnaire to the Client as a means to communicate information gathered from these inquiries and/or activities to the EP. The User may elect whether to communicate this information to the EP and/or to communicate this information to the EP by other means (e.g., through conversation or submission of documents). As indicated in our contract, if multiple Users are requesting reliance on the Phase I ESA, the Client was responsible for forwarding a copy of the questionnaire to all appropriate entities (collectively the User).

User-supplied information is discussed in applicable sections of this report. Sections A.4.a through A.4.f present any information communicated to us by the User that the EP has determined to indicate the possible presence or likely presence of a recognized environmental condition.

A.3.a. Environmental Liens

An environmental lien is a charge, security, or encumbrance, upon title to the Site to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of environmental issues at the Site.

The User was not aware of a record or awareness of environmental liens recorded against the Site.

A.3.b. Activity and Use Limitations

Activity and Use Limitations (AULs) are legal or physical restrictions or limitations on the use of, or access to, a Site to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil, soil vapor, groundwater, and/or surface water on the Site or to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. AULs, which may include institutional and/or engineering controls, are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil, groundwater, and/or surface water on the Site.

The User was not aware of a record or awareness of AULs recorded against the Site.

A.3.c. Specialized Environmental Knowledge

Specialized environmental knowledge includes any information and/or experience related to the Site or adjoining properties including, but not limited to, any obvious indicators that point to the presence or likely presence of environmental issues at the Site.

The User was not aware of specialized environmental knowledge for the Site.

A.3.d. Valuation Reduction for Environmental Issues

Valuation reduction for environmental issues includes the relationship of the purchase price to the fair market value of the property.

The User was not aware of information indicating any reduction in purchase price or fair market value due to environmental issues.

A.3.e. Commonly Known or Reasonably Ascertainable Information

Commonly known or reasonably ascertainable information includes information about the Site that generally is known to the public within the community where the Site is located and can be easily sought and found from individuals familiar with the Site or from easily attainable public sources of information.

The User was not aware of commonly known or reasonably ascertainable information for the Site except for its agricultural use.

A.3.f. Degree of Obviousness

The User must consider the degree of obviousness of the presence or likely presence of releases or threatened releases at the Site and the ability to detect releases or threatened releases by appropriate investigation.

The User was not aware of any obvious indications of the presence or likely presence of releases or threatened releases at the Site.

B. Records Review

The purpose of the records review is to obtain and review records that will help identify recognized environmental conditions in connection with the Site. We consulted only those regulatory and historical sources that were readily available, practically reviewable, and likely to be useful to develop a history of previous uses of the Site and surrounding area within the time and cost constraints of this Phase I ESA.

B.1. Site Location

We accessed various documents and online sources to obtain Site location information. The following is a summary of our findings:

Address:	Not assigned	Not assigned
City:	Redwood Falls	
County:	Redwood	
State:	MN	
Property Identification Number:	62-008-2020	62-005-4020
Owner:	Mervin and Sally Kerkhoff	
Legal Description:	NW ¼ ex RR and all SW ¼ east and north of RR	SE ¼ lying south of County Ditch 52 ex TR 640' x 510'
Latitude:	44.516 North	
Longitude:	-95.091 West	
Section, Township, Range:	Section 8, Township 112, Range 35	Section 5, Township 112, Range 35
Size:	208.55 acres	116 acres of larger 140.51 acres

A Site location map and Site sketch are attached in Appendices A and B, respectively. Information obtained from the Redwood County Property Information web page is attached in Appendix C. The Site consists of two parcels developed as cultivated cropland. Parcel 62-008-2020 is located in the southwest quadrant of the intersection of County Road 24 and County Road 1. Parcel 62-005-4020 consists of 116 acres of the larger legal parcel located in the northeast quadrant of County Road 24 and County Road 1.

B.2. Physical Setting

The purpose of the physical setting review is to provide information about the physical setting of the Site in order to aid in the evaluation of both physical characteristics of the Site and additional attribute data, which is useful in assessing the impact of migration of contaminants and subsequent impact on soils and/or groundwater.

B.2.a. Topography

According to the United States Geological Survey (U.S.G.S) 7.5-minute topographic map series, Redwood Falls, Minnesota quadrangle, the Site is located at an elevation of approximately 1,020 feet to 1,030 feet above mean sea level. The topography of the Site is gently undulating with a slight downward slope to the northeast.

B.2.b. Geology

The unconsolidated sediment in the Site vicinity are diamicton deposits of the Heiberg Member of the New Ulm Formation with a vein of Holocene and Pleistocene sand and gravelly sand (Gowan and Jennings, 2016). The diamicton deposit matrix texture ranges from loam to clay loam with variable colors.

The predominate uppermost bedrock unit in the Site vicinity is the Neoproterozoic to Paleoproterozoic Morton Block (Jirsa et al., 2016). The Morton Block is described as granite-rich migmatitic gneiss and foliated granite. In addition, veins or pockets of the following uppermost bedrock units are also present at, or in the vicinity of, the Site: Morton Block tonalitic to granodioritic orthogneiss; Holocene silt and clay; and Heiberg Member wash diamictite. The depth to bedrock in the Site vicinity is approximately 50 feet to 100 feet below land surface (Setterholm, 2016).

B.2.c. Hydrogeology

The approximate depth to groundwater in the vicinity of the Site could not be ascertained, due to the lack of available hydrogeological information. Review of registered wells located in the vicinity of the Site identified static water levels at depths of approximately 18 feet to 38 feet with the shallower depths to the east and northeast of the Site.

According to the USGS 7.5-minute topographic map series, the surface gradient in the vicinity of the Site is generally to the northeast. Accordingly, the regional groundwater flow direction within the consolidated deposits in the vicinity of the Site may also be generally to the northeast. However, the regional groundwater flow direction in the vicinity of the Site could not be ascertained, due to lack of available hydrogeological information. The local direction of groundwater flow may be affected by nearby streams, lakes, wells, and/or wetlands and may vary seasonally.

The Site-specific groundwater flow direction was not determined through direct measurement during this Phase I ESA. Additional field investigation, beyond the Scope of Services of this Phase I ESA, would be required to determine this information.

B.3. Regulatory Report

We obtained regulatory database information pertaining to the Site and surrounding area from GeoSearch. The GeoSearch report is a compilation of records of facilities that are included on current federal and state environmental regulatory databases. The databases were searched based on the specified minimum search distances from the Site as established by ASTM Practice E1527-13.

The GeoSearch report also includes a description, source reference, date of acquisition, and the specified approximate minimum search distance criteria for each database and list. A copy of the GeoSearch report is attached in Appendix D.

We reviewed the GeoSearch report to identify records that indicate known or potential recognized environmental conditions on the Site and/or surrounding area and to evaluate the likelihood for those recognized environmental conditions to impact the Site based on the information obtained in this Phase I ESA.

B.3.a. Site

The Site is not listed in the GeoSearch report on any of the standard environmental record sources as specified in the ASTM Standard.

B.3.b. Adjoining Properties

The following facilities are identified on properties that adjoin the Site in the GeoSearch report:

- Carris Health Redwood, plotted on the adjoining parcel to the northwest of the southwest parcel of the Site and across County Road 24. The GeoSearch report indicates that the facility is listed on the Water Discharge Permit (WDP) and What's In My Neighborhood (WIMN) databases for an active construction stormwater permit. Identification of the facility on these databases does not imply that a release has occurred at the facility. The facility was observed to be under construction at the time of the reconnaissance.

B.3.c. Surrounding Area

We reviewed the GeoSearch report for facilities located beyond adjoining properties that may indicate a release or likely release of hazardous substances and/or petroleum products that may impact the Site. Based on factors that include regulatory status, distance from the Site, and/or location relative to the regional groundwater flow direction, as referenced in Section B.2., no facilities are identified in the GeoSearch report that warrant further consideration as potential recognized environmental conditions.

B.3.d. Unmapped Sites

The GeoSearch report identified no unmappable sites, which, because of poor or inadequate address information could not be mapped by GeoSearch.

B.4. Additional Federal, State, and Local Environmental Records

To enhance and supplement the regulatory database report, we obtained or reviewed practically reviewable or reasonably ascertainable local city and/or county records and/or additional state records to identify records that indicate known or potential recognized environmental conditions at the Site.

B.4.a. Well Databases

The Minnesota Geological Survey (MGS) maintains the Minnesota Well Index (MWI), which is a limited database of water well records. The MWI was accessed through the Minnesota Department of Health (MDH) website. Not all private water wells are listed in that database. In addition, the MDH maintains a database of water well records disclosed and registered during real estate property transactions, the Well Disclosure Certificate database, within their Well Management Section that may contain well records not listed in the MWI. Our review of the MWI and Well Disclosure Certificate databases revealed no documentation of verified water wells located on the Site.

B.4.b. State Regulatory Web Pages

We accessed the Minnesota Department of Agriculture (MDA) "What's In My Neighborhood" Agricultural Interactive Mapping web page and the MPCA "What's In My Neighborhood" web page for information regarding the potential for the Site, adjoining properties, or surrounding properties to be of environmental concern that were not identified in the regulatory database report.

We did not identify facilities on the state regulatory web pages we accessed that were not already listed in the GeoSearch report discussed in Section B.3.

B.5. Regulatory Agency File and Records Review

The purpose of the regulatory file review is to obtain sufficient information to assist in determining if a recognized environmental condition, historical recognized environmental condition, controlled recognized environmental condition, or a *de minimis* condition exists at the Site in connection with a regulatory report listing.

Based on our review of the regulatory report, it is our opinion that a regulatory agency file and records review is not warranted due to factors that include regulatory status, distance from the Site, and/or location relative to the regional groundwater flow direction, as referenced in Section B.2.

B.6. Historical-Use Information

The objective of the historical-use information review was to develop a history of the previous uses of the Site and surrounding area, and to help evaluate the likelihood of past uses having led to recognized environmental conditions in connection with the Site. The following table summarizes the historical information reviewed. Details regarding the information reviewed are provided in the sections below.

Historical Source	Provided By:	Years Available
Fire Insurance Maps	Historical Information Gatherers, Inc. (HIG)	No coverage
Topographic Maps	HIG	1952, 1982, 1992, 2013, 2016
Aerial Photographs	HIG	1950, 1955, 1961, 1968, 1978, 1984, 1988, 1992, 1996, 2003, 2008, 2013, 2015
	Redwood County GIS website	2017

B.6.a. Fire Insurance Maps

According to HIG, no fire insurance map coverage is available for the Site. A copy of the no coverage letter is attached in Appendix E.

B.6.b. Topographic Maps

Copies of the historical topographic maps are attached in Appendix F. The following is a summary of the information reviewed.

1952

No structures are depicted at the Site. Scattered wetlands are depicted on the Site. The existing street grid is present. A county ditch borders the northeast parcel of the Site to the north. Scattered residences are depicted in the surrounding area. A railroad track runs parallel along the south side of State Highway 67.

1982 - 1992

No significant changes are noted at the Site or in the surrounding area except that the wetlands on the Site are no longer depicted and the railroad track is no longer depicted in 1992.

2013 - 2016

The maps only shows topography, roads and waterways; therefore, no specific features are depicted on or in the vicinity of the Site. No indications of issues of environmental concern were apparent at the Site on the maps.

B.6.c. Aerial Photographs

Copies of the aerial photographs are attached in Appendix G. The Site is developed as cultivated cropland on all of the photographs. No structures are present on the Site. The existing adjoining streets are present. Railroad tracks are apparent along the southwest side of State Highway 67 through at least 1978. The surrounding area is developed as cultivated cropland with scattered farmsteads.

B.7. Previous Environmental Documents

No previous environmental documents regarding the Site were provided for review.

C. Interviews/Inquiries

We contacted the following individuals to obtain knowledge or historical and current land-use information regarding the Site:

Mervin Kerkhoff, Site owner

Mr. Kerkhoff indicated that they have owned the Site since 1997 and that the Site has always been developed as cultivated cropland. He added that there have been no structures on the Site. Mr. Kerkhoff was not aware of any past or current water wells, septic systems, or storage tanks on the Site. Mr. Kerkhoff stated that he was not aware of environmental concerns at the Site.

We made inquiry to the following local government offices and/or officials with the city of Redwood Falls to obtain knowledge or records of historical and current land-use information regarding the Site and surrounding area:

Keith Muetzel, City Administrator, City of Redwood Falls

Mr. Muetzel completed the User Questionnaire, as discussed in Section A.3, and an Information Request Form for Phase I Environmental Site Assessments. Mr. Muetzel indicated that the Site is developed for agricultural use and that there are no existing buildings on the Site. Mr. Muetzel did not know if there were, or have been, any water wells, septic systems, storage tanks, dumping, or landfilling on the Site. He added that the Site is not connected to the municipal water and sanitary sewer systems. Mr. Muetzel was unaware of any environmental concerns on the Site.

Tim Hanna, Building Official/Zoning Administrator, City of Redwood Falls

Mr. Hanna stated they have no records of any environmental concerns at the Site.

D. Site Reconnaissance

The objective of the Site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the Site.

A Braun Intertec environmental professional, Kelly Brown, conducted a Site reconnaissance on May 29, 2020. We were unaccompanied during the Site reconnaissance. At the time of the Site reconnaissance, the weather was partly sunny and breezy with a temperature of about 60 degrees Fahrenheit.

D.1. Methodology

Observations made at the time of the Site reconnaissance were conducted by physically traversing and visually observing the exterior aspects of the Site from the adjoining roadways. Adjoining properties were visually observed from the Site boundaries or nearby public right-of-way areas.

D.2. Site Characteristics

At the time of the reconnaissance, the Site consisted of one approximately 209 acre parcel (PIN 62-008-2020) located in the southwest quadrant of the intersection of County Road 24 and County Road 1 and a 116 acre part of a larger parcel (PIN 62-005-4020) located in the northeast quadrant of County Road 24 and County Road 1. Both parcels were developed as cultivated cropland; no structures were present. Several dozen large bales of hay were located on the southwest parcel. Markers for telephone and electric utilities are noted along some of the Site borders. The Site topography was gently undulating with a slight downward slope to the northeast. A Site Sketch and Site Photographs are attached in Appendices B and H, respectively.

D.3. Adjoining Property Use and Characteristics

The southwest parcel of the Site was bordered on the north by County Road 24 with a farmstead and cultivated cropland located beyond; on the east by County Road 1 with farmsteads and cultivated cropland located beyond; on the southwest by State Highway 67 with cultivated cropland and scattered farmsteads located beyond; and on the west by a drainage ditch with cultivated cropland located beyond.

The northeast parcel of the Site was bordered on the north by a drainage ditch with cultivated cropland and then commercial development located beyond; on the east by cultivated cropland and then a farmstead; on the south by County Road 24 with a farmstead and cultivated cropland located beyond; and on the west by County Road 1 with cultivated cropland and then a farmstead located beyond.

No obvious indications of environmental concern were noted on adjoining properties to the Site at the time of the reconnaissance.

D.4. Pits, Ponds, Pools of Liquid, or Lagoons

No indications of pits, ponds, pools of liquid, or lagoons having the potential to contain hazardous substances or petroleum products were observed at the Site or on adjoining properties at the time of our reconnaissance.

D.5. Stained Soil, Pavement, or Corroded Surfaces

No stained soil, pavement, or surfaces were observed at the Site at the time of our reconnaissance.

D.6. Solid Waste Disposal

At the time of the reconnaissance, no indications of waste disposal areas, observed fill, mounds, depressions, burn pits or graded areas by non-natural causes were observed at the Site that would indicate a potential for the presence of trash, construction debris, demolition debris, or other solid waste disposal.

D.7. Stressed Vegetation

No areas of stressed, discolored, stained or dead vegetation beyond what would be expected due to seasonal conditions were observed at the time of the Site reconnaissance.

D.8. Hazardous Substances

No indications of current and/or historic use, storage, staining, or spills of hazardous substances were observed at the Site at the time of the reconnaissance.

D.9. Petroleum Products

No indications of current and/or historic use, storage, staining, or spills of petroleum products were observed at the Site at the time of the reconnaissance.

D.10. Storage Tanks

No indications of aboveground or underground storage tanks (AST/UST) were noted at the Site at the time of the reconnaissance.

D.11. Unidentified Drums and Containers

No drums containing unidentified substances suspected of being a hazardous substance or petroleum product were observed at the Site at the time of our reconnaissance.

D.12. Odors

No indications of strong, pungent, or noxious odors were observed at the time of the Site reconnaissance.

D.13. Potential PCB-Containing Electrical and Hydraulic Equipment

No indications of potentially PCB-containing electrical or hydraulic equipment were noted at the Site at the time of the reconnaissance.

D.14. Wastewater Discharges

No indications of wastewater discharging into a drain, ditch, underground injection system, or stream on or adjacent to the Site were observed at the time of the reconnaissance.

D.15. Sewage Disposal System

According to Mr. Muetzel, the Site is not connected to municipal sewer services

D.16. Wells

No indications of wells such as monitoring wells, dry wells, irrigation wells, injection wells, abandoned wells, or other non-potable wells were observed at the Site at the time of the reconnaissance.

D.17. Potable Water Supply

According to Mr. Muetzel, the Site is not connected to municipal water services.

D.18. Additional On-Site Observations

Several approximate 5-foot flags were observed throughout the Site. Mr. Kerkhoff stated the flags mark drain tile intakes.

E. Summary of Land-Use Activities

At the time of this assessment, the Site consisted of one approximately 209 acre parcel (PIN 62-008-2020) located in the southwest quadrant of the intersection of County Road 24 and County Road 1 and a 116 acre part of a larger parcel (PIN 62-005-4020) located in the northeast quadrant of County Road 24 and County Road 1. Both parcels were developed as cultivated cropland; no structures were present. Our research has revealed that the Site has been developed as cultivated cropland since at least 1950. The surrounding area has been developed for farmstead and cultivated cropland since at least 1950. A railroad track was located along the southwest side of State Highway 67 from at least 1950 through 1982.

F. Limiting Conditions and Data Gaps

The findings and conclusions presented in this report are based on procedures described in ASTM Practice E1527-13, inquiries with public officials, available literature cited in this report, conditions noted at the time of our Phase I ESA, and our interpretation of the information obtained as part of this Phase I ESA. Our findings and conclusions are limited to the specific project and properties described in this report and by the accuracy and completeness of information provided by others.

An environmental site assessment cannot wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property within reasonable limits of time and cost.

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in the same locality. No warranty, express or implied, is made.

The following limiting conditions or data gaps were encountered:

- Historical resources were not readily available back to 1940.
- Direct access to the Site was not available. Observation of the Site was limited from the adjoining roadways.

The identified limiting conditions and/or data gaps did not affect the environmental professional's ability to render opinions regarding conditions indicative of a release or threatened release.

G. Findings

The findings include identified known or suspect recognized environmental conditions, controlled recognized environmental conditions, historical recognized conditions, *de minimis* conditions and additional issues in connection with the Site.

The following findings are based on the results of our assessment:

- Information regarding the Site was available back to 1950. The information indicates that the Site was developed at that time as cultivated cropland. Based on the available information, it is reasonable to assume that the first developed use of the Site was as cultivated agricultural land.
- The Site currently consists of two parcels totaling approximately 325 acres of cultivated cropland.
- The government database records review identified several regulated facilities within the vicinity of the Site.

H. Opinions

According to the User, the Phase I ESA was conducted in association with the acquisition and redevelopment of the Site. Opinions expressed herein are influenced by the stated reason for conducting the Phase I ESA. Furthermore, the expressed opinions might not be applicable to alternate reasons for reliance on the content of the Phase I ESA.

H.1. Recognized Environmental Conditions

A recognized environmental condition is defined by ASTM Practice E1527-13 as: “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment, 2) under conditions indicative of a release to the environment, or 3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions.”

This assessment identified no recognized environmental conditions in connection with the Site.

H.2. Controlled Recognized Environmental Conditions

A controlled recognized environmental condition is defined by ASTM Practice E1527-13 as “a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.”

This assessment identified no controlled recognized environmental conditions in connection with the Site.

H.3. Historical Recognized Environmental Conditions

A historical recognized environmental condition is defined by ASTM Practice E1527-13 as “a past release of any hazardous substances or petroleum products that has occurred in connection with the Site and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the Site to any required controls.”

This assessment identified no historical recognized environmental conditions in connection with the Site.

H.4. De Minimis Conditions

A *de minimis* condition is defined by ASTM Practice E1527-13 as “a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.”

The following findings are considered *de minimis* conditions:

- The Site has been developed as cultivated cropland since at least 1950. It is our opinion that the past and current use of the Site for agricultural purposes is considered a *de minimis* condition for the Site.
- The government database records review identified regulated facilities in the vicinity of the Site. Based on mitigating factors that affect the apparent significance of the identified facilities on the Site, such as regulatory status, distance from the Site, location of the facility in relation to the groundwater flow direction, and/or the database(s) the identified regulated facilities are listed on, it is our opinion that the identified regulated facilities are considered *de minimis* conditions.

I. Conclusions

We have conducted this Phase I ESA of the Site in general conformance with the scope and limitations of ASTM Practice E1527-13. Any exceptions to, or deletions from, this practice are described in Section F of this report.

This assessment identified no recognized environmental conditions, controlled recognized environmental conditions, or historical recognized environmental conditions in connection with the Site.

J. References

References are listed in Appendix I.

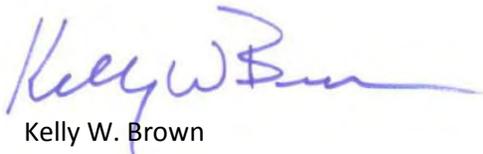
K. Environmental Professional Statement and Qualifications

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. We have developed and performed the all-appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Qualifications of the environmental professional and the qualifications of the personnel conducting the site reconnaissance and interviews, if conducted by someone other than an environmental professional, are attached in Appendix J.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312.

BRAUN INTERTEC CORPORATION

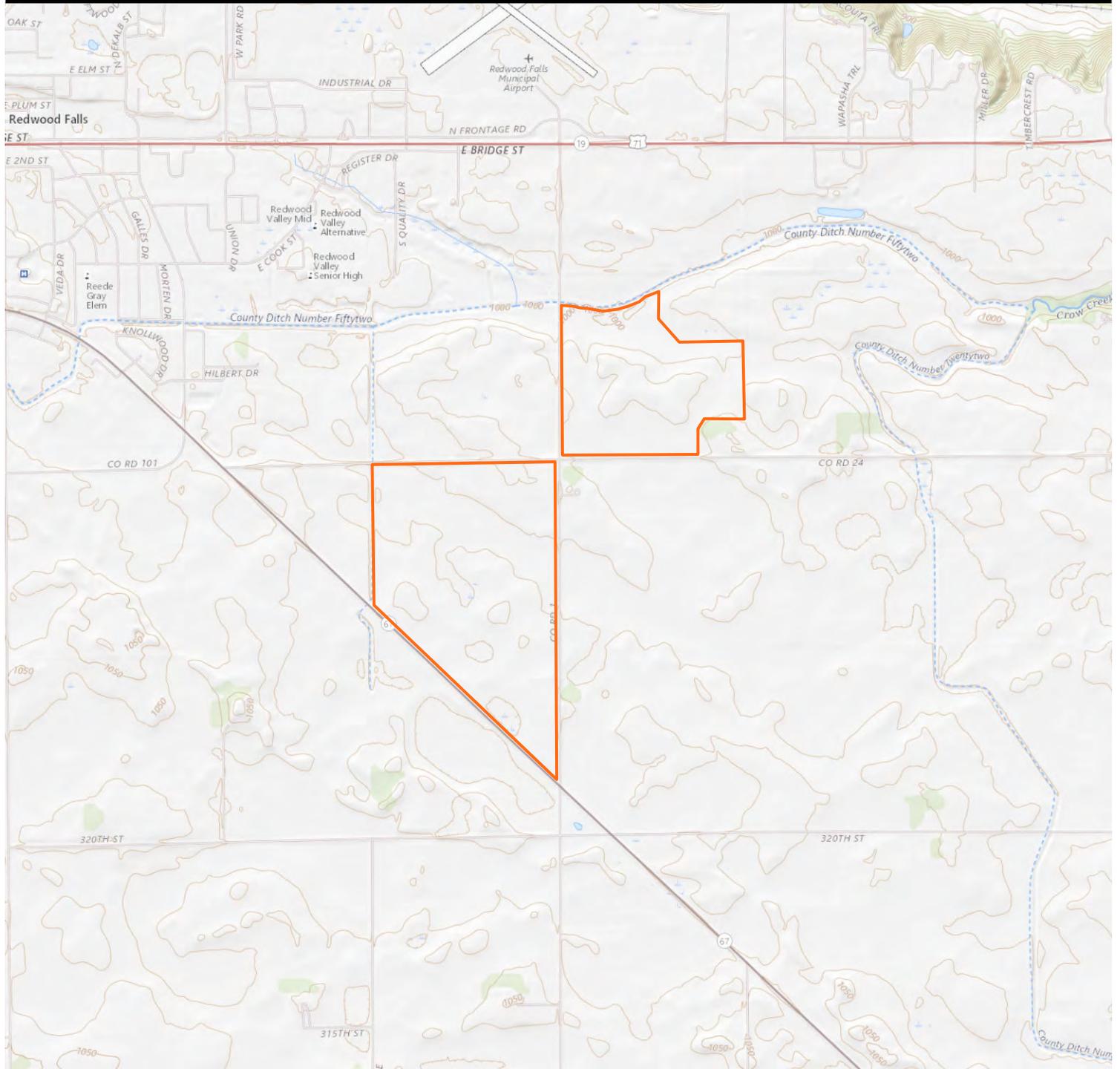


Kelly W. Brown
Senior Scientist



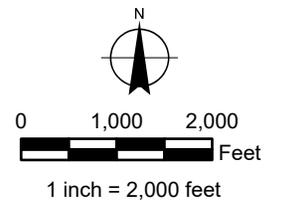
James E. Stephan
Group Manager, Senior Scientist

Appendix A
Site Location Map



 Approximate Site Boundary

Source: USGS US Topo Map



11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:
B2004585

Drawing No:
B2004585

Drawn By: ZS
Date Drawn: 5/26/2020
Checked By: AB
Last Modified: 5/26/2020

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

Site Location Map

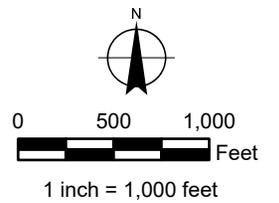
Figure 1

Appendix B
Site Sketch



Source: Google Earth Imagery

 Approximate Site Boundary



11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:
B2004585

Drawing No:
B2004585

Drawn By: ZS
Date Drawn: 5/26/2020
Checked By: AB
Last Modified: 5/26/2020

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

Site Sketch

Figure 2

Appendix C

Redwood County Property Information



Parcel Summary

Parcel ID 62-008-2020
 Property Address
 Sec/Twp/Rng 8-112-35
 Lot/Block N/A
 Plat
 Brief Tax Description NW1/4 EX RR & ALL SW1/4 E & N OF RR, 208.55A
 (Note: Not to be used on legal documents)
 Deeded Acres 208.55
 CER 68.12
 Class AGRICULTURE
 Homestead FULL HOMESTEAD
 Twp/City PAXTON
 School District Redwood Area

Owner Information

Taxpayer
[Kerkhoff/Mervin E & Sally J](#)
 38267 280 St
 Redwood Falls MN 56283

Joint Owner
[Kerkhoff/Sally J](#)
 Redwood Falls MN 56283

Current Valuation

Values as of January 2, 2020 are not final at this time. Values will be finalized at the State Board of Appeal and Equalization meeting in June. Please call the assessor's office at 507/637-4008 with questions you may have regarding your values.

	Market	Taxable
Land	\$1,292,600	\$1,292,600
Building	\$0	\$0
Machine	\$0	\$0
Exemptions		
Exclusions		\$0
Total Value	\$1,292,600	\$1,292,600

Valuation

	2020 Payable 2021	2019 Payable 2020
+ Estimated Building Value	\$0	\$0
+ Estimated Land Value	\$1,292,600	\$1,319,000
+ Estimated Machinery Value	\$0	\$0
= Total Estimated Market Value	\$1,292,600	\$1,319,000

Current Year Taxes

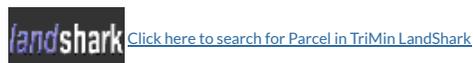
Taxation History

	2018 Payable 2019	2017 Payable 2018	2016 Payable 2017
+ Total Estimated Market Value	\$1,319,000.00	\$1,345,900.00	\$1,402,000.00
+ Excluded Value	\$0.00	\$0.00	\$0.00
+ Homestead Exclusion	\$0.00	\$0.00	\$0.00
= Taxable Market Value	\$1,319,000.00	\$1,345,900.00	\$1,402,000.00
= Gross Taxes Due	\$0.00	\$8,916.87	\$8,589.96
= Other Credits	\$986.56	\$1,038.87	\$0.00
= Special Assessments	\$12.00	\$12.00	\$6.04
= Tax Abatement/ADS(-)	\$0.00	\$0.00	\$0.00
= Total Taxes Due	\$7,948.00	\$7,890.00	\$8,596.00

Taxes Paid

Batch Date	Paid By	Validation #	Total Amount
5/08/2020	KERKHOFF/MERVIN	16	\$3,958.00

TriMin LandShark



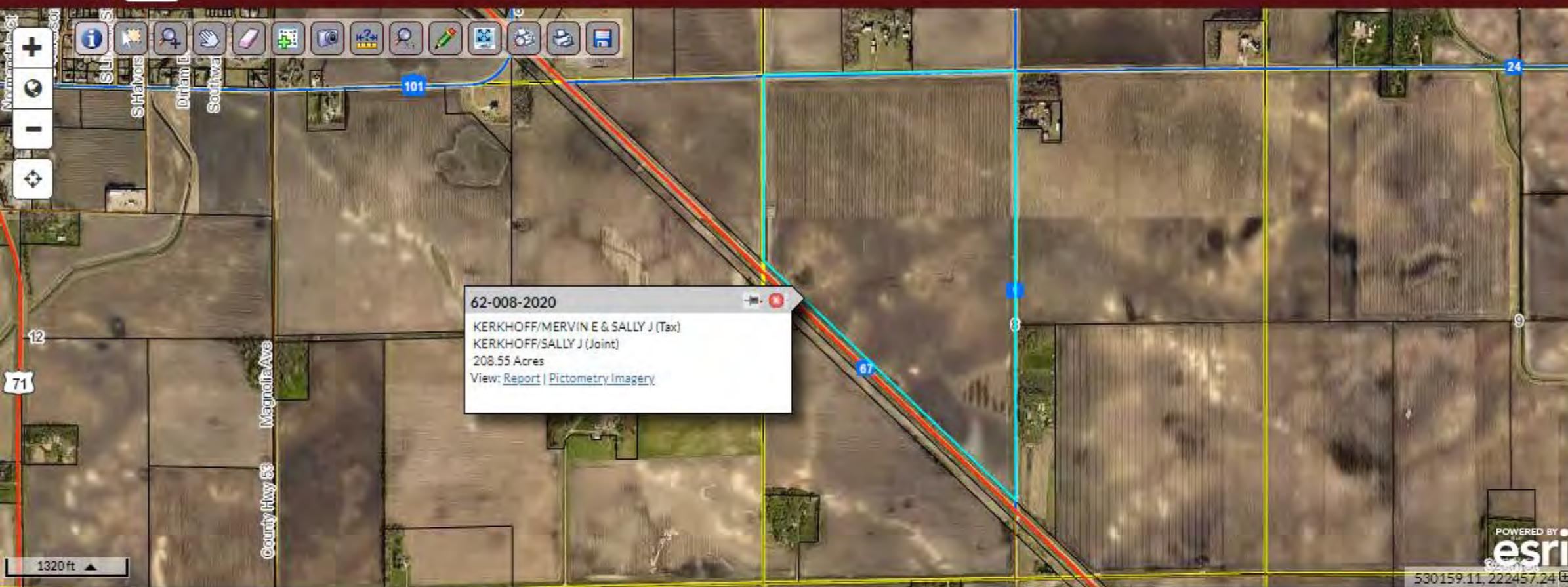
No data available for the following modules: Land Information, Building Information, Other Improvements, Sales Information.

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62-008-2020
 KERKHOFF/MERVIN E & SALLY J (Tax)
 KERKHOFF/SALLY J (Joint)
 208.55 Acres
[View: Report](#) | [Pictometry Imagery](#)

Results:

Parcel ID - 62-008-2020

Owner - KERKHOFF/MERVIN E & SALLY J (Tax)
 KERKHOFF/SALLY J (Joint)
 Acres - 208.55
[View: Report](#) | [Pictometry Imagery](#)

Parcel ID	62-008-2020	Alternate ID	n/a	Owner Address	KERKHOFF/MERVIN E & SALLY J
Sec/Twp/Rng	8-112-35	Class	AGRICULTURE		38267 280 ST
Property Address		Acreage	208.55		REDWOOD FALLS MN 56283
District	n/a				
Brief Tax Description	NW1/4 EX RR & ALL SW1/4 E & N OF RR, 208.55A (Note: Not to be used on legal documents)				



Parcel Summary

Parcel ID 62-005-4020
Property Address
Sec/Twp/Rng 5-112-35
Lot/Block N/A
Plat
Brief Tax Description SE1/4 LYING S OF CTY DITCH 52 EX TR 640' X 510', 140.51A
(Note: Not to be used on legal documents)
Deeded Acres 140.51
CER 60.23
Class AGRICULTURE
Homestead FULL HOMESTEAD
Twp/City PAXTON
School District Redwood Area

Owner Information

Taxpayer
[Kerkhoff/Mervin E & Sally J](#)
 38267 280 St
 Redwood Falls MN 56283

Joint Owner
[Kerkhoff/Sally J](#)

Redwood Falls MN 56283

Sales Information

Buyer	Seller	Transaction	Sale Descr	Multi Parcel	Purchase Price	Adj Sale Price	Sale Date	Auditor Date	eCRV
KERKHOFF/SALLY & M	STEFFENS/ELEANOR L	WARRANTY DEED	RESIDENTIAL (LESS THAN 4 UNITS)	Single Parcel	\$27,840	\$27,840	2/1997	2/10/1997	-
JOINT ACRES, LP	STEFFENS/ELEANOR L	WARRANTY DEED	FARM - BARE LAND (35 OR MORE ACRES)	Single Parcel	\$179,800	\$179,800	2/1997	2/10/1997	-
KERKHOFF/MERVIN &	STEFFENS/ELEANOR L	WARRANTY DEED	FARM - BARE LAND (35 OR MORE ACRES)	Single Parcel	\$153,000	\$153,000	2/1997	2/10/1997	-

Current Valuation

Values as of January 2, 2020 are not final at this time. Values will be finalized at the State Board of Appeal and Equalization meeting in June. Please call the assessor's office at 507/637-4008 with questions you may have regarding your values.

	Market	Taxable
Land	\$813,300	\$813,300
Building	\$0	\$0
Machine	\$0	\$0
Exemptions		
Exclusions		\$0
Total Value	\$813,300	\$813,300

Valuation

	2020 Payable	2021 Payable	2020 Payable
+ Estimated Building Value		\$0	\$0
+ Estimated Land Value		\$813,300	\$829,900
+ Estimated Machinery Value		\$0	\$0
= Total Estimated Market Value		\$813,300	\$829,900

Current Year Taxes

Taxation History

	2018 Payable	2019 Payable	2018 Payable	2017 Payable
+ Total Estimated Market Value	\$829,900.00	\$846,900.00	\$882,100.00	\$882,100.00
+ Excluded Value	\$0.00	\$0.00	\$0.00	\$0.00
+ Homestead Exclusion	\$0.00	\$0.00	\$0.00	\$0.00
= Taxable Market Value	\$829,900.00	\$846,900.00	\$882,100.00	\$882,100.00
= Gross Taxes Due	\$0.00	\$5,609.71	\$5,405.00	\$5,405.00
= Other Credits	\$620.73	\$653.71	\$0.00	\$0.00
= Special Assessments	\$142.00	\$142.00	\$71.00	\$71.00
= Tax Abatement/ADS(-)	\$0.00	\$0.00	\$0.00	\$0.00
= Total Taxes Due	\$5,136.00	\$5,098.00	\$5,476.00	\$5,476.00

Taxes Paid

Batch Date	Paid By	Validation #	Total Amount
5/08/2020	KERKHOFF/MERVIN	16	\$2,522.00

TriMin LandShark



[Click here to search for Parcel in TriMin LandShark](#)

No data available for the following modules: Land Information, Building Information, Other Improvements.

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Developed by



[Version 2.3.61](#)



62-005-4020

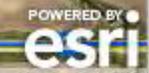
KERKHOFF/MERVIN E & SALLY J (Tax)
 KERKHOFF/SALLY J (Joint)
 140.51 Acres
 View: [Report](#) | [Pictometry Imagery](#)

Results:

Parcel ID - 62-005-4020

Owner - KERKHOFF/MERVIN E & SALLY J (Tax)
 KERKHOFF/SALLY J (Joint)
 Acres - 140.51
 View: [Report](#) | [Pictometry Imagery](#)

Parcel ID	62-005-4020	Alternate ID	n/a	Owner Address	KERKHOFF/MERVIN E & SALLY J
Sec/Twp/Rng	5-112-35	Class	AGRICULTURE		38267 280 ST
Property Address		Acreage	140.51		REDWOOD FALLS MN 56283
District					
Brief Tax Description	SE 1/4 LYING S OF CTY DITCH 52 EX TR 640' X 510', 140.51A (Note: Not to be used on legal documents)				



537687.24, 224041.93

Appendix D
GeoSearch Report

Radius Report

Target Property:
***Residential Development
County 1 and County 24
Redwood Falls, Redwood County, Minnesota***

Prepared For:
Historical Information Gatherers

***Order #: 147414
Job #: 354159
Project #: 2037924
Date: 05/27/2020***

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<i>Zip Report</i>	See Attachment

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Target Property Summary

Target Property Information

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

Coordinates

Area centroid (-95.091410, 44.5168482)

1,030 feet above sea level

USGS Quadrangle

Redwood Falls, MN

Geographic Coverage Information

County/Parish: Redwood (MN)

ZipCode(s):

Redwood Falls MN: 56283

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSMN	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	TP/AP
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR05	0	0	0.1250
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR05	0	0	TP/AP
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR05	0	0	TP/AP
HAZARDOUS WASTE COMPLIANCE DOCKET FACILITIES	HWCD	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SSEHRI PFAS CONTAMINATION SITES	SSEHRIPFAS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	0	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	0	0	0.2500
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
SUB-TOTAL		0	0	

Database Summary

STATE (MN) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
SITES WITH INSTITUTIONAL CONTROLS	IC	0	0	TP/AP
HAZARDOUS WASTE CLEANUP SITES	HWCS	0	0	0.1250
WATER DISCHARGE PERMITS	WDP	1	0	0.1250
REGISTERED STORAGE TANKS	UAST	0	0	0.2500
CERCLIS SITES	CERCLIS	0	0	0.5000
CLOSED LANDFILLS	CLF	0	0	0.5000
HAZARDOUS WASTE TREATMENT STORAGE DISPOSAL SITES	HWSTSD	0	0	0.5000
PETROLEUM BROWNFIELDS PROGRAM SITES	PBF	0	0	0.5000
POTENTIAL VOLUNTARY INVESTIGATION AND CLEANUP PROGRAM SITES	PVICP	0	0	0.5000
REGISTERED LEAKING STORAGE TANKS	LUAST	2	0	0.5000
REGISTERED LEAKING STORAGE TANKS PRIOR TO APRIL 2016	LUAST2016	1	0	0.5000
SOLID WASTE FACILITIES	SWF	0	0	0.5000
UNPERMITTED DUMP SITES	UNPERMDUMPS	0	0	0.5000
VOLUNTARY INVESTIGATION AND CLEANUP PROGRAM SITES	VICP	0	0	0.5000
MPCA REMEDIATION SITES	REMSITES	1	0	1.0000
SUPERFUND SITE INFORMATION LISTING	SE	0	0	1.0000
SUB-TOTAL		5	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
CONTAMINATED SOIL TREATMENT FACILITIES	CSTF	0	0	TP/AP
SPILLS LISTING	PCASPILLS	0	0	TP/AP
TIER TWO FACILITY LISTING	TIERII	0	0	TP/AP
BULK STORAGE PERMITS	BULKSTORAGE	0	0	0.2500
AGRICULTURAL CONTINGENCY SITES	CONTINGENCIES	0	0	0.5000
AGRICULTURAL SPILLS LISTING	AGSPILLS	1	0	0.5000
WHAT'S IN MY NEIGHBORHOOD DATABASE	WIMN	16	0	0.5000
SUB-TOTAL		17	0	

Database Summary

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR05	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR05	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	
TOTAL		22	0	

Database Radius Summary

FEDERAL LISTING

Standard environmental records are displayed in **bold**.

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	0.0200	0	NS	NS	NS	NS	NS	0
ECHOR05	0.0200	0	NS	NS	NS	NS	NS	0
ERNSMN	0.0200	0	NS	NS	NS	NS	NS	0
HMIRSR05	0.0200	0	NS	NS	NS	NS	NS	0
HWCD	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	0	NS	NS	NS	NS	NS	0
NLRRCRAC	0.0200	0	NS	NS	NS	NS	NS	0
NLRRCRAT	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	0.0200	0	NS	NS	NS	NS	NS	0
SEMCLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSEHRIPFAS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	0	NS	NS	NS	NS	NS	0
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR05	0.1250	0	0	NS	NS	NS	NS	0
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	0.2500	0	0	0	NS	NS	NS	0
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	0	0	NS	NS	NS	0
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	0.5000	0	0	0	0	NS	NS	0
DNPL	0.5000	0	0	0	0	NS	NS	0
SEMS	0.5000	0	0	0	0	NS	NS	0
SEMSARCH	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NMS	1.0000	0	0	0	0	0	NS	0
NPL	1.0000	0	0	0	0	0	NS	0
PNPL	1.0000	0	0	0	0	0	NS	0
RCRAC	1.0000	0	0	0	0	0	NS	0
RCRASUBC	1.0000	0	0	0	0	0	NS	0

Database Radius Summary

SUB-TOTAL		0	0	0	0	0	0	0
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Database Radius Summary

STATE (MN) LISTING

Standard environmental records are displayed in **bold**.

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
CDL	0.0200	0	NS	NS	NS	NS	NS	0
CSTF	0.0200	0	NS	NS	NS	NS	NS	0
IC	0.0200	0	NS	NS	NS	NS	NS	0
PCASPILLS	0.0200	0	NS	NS	NS	NS	NS	0
TIERII	0.0200	0	NS	NS	NS	NS	NS	0
HWCS	0.1250	0	0	NS	NS	NS	NS	0
WDP	0.1250	0	1	NS	NS	NS	NS	1
BULKSTORAGE	0.2500	0	0	0	NS	NS	NS	0
UAST	0.2500	0	0	0	NS	NS	NS	0
AGSPILLS	0.5000	0	0	1	0	NS	NS	1
CERCLIS	0.5000	0	0	0	0	NS	NS	0
CLF	0.5000	0	0	0	0	NS	NS	0
CONTINGENCIES	0.5000	0	0	0	0	NS	NS	0
HWSTSD	0.5000	0	0	0	0	NS	NS	0
LUAST	0.5000	0	0	0	2	NS	NS	2
LUAST2016	0.5000	0	0	0	1	NS	NS	1
PBF	0.5000	0	0	0	0	NS	NS	0
PVICP	0.5000	0	0	0	0	NS	NS	0
SWF	0.5000	0	0	0	0	NS	NS	0
UNPERMDUMPS	0.5000	0	0	0	0	NS	NS	0
VICP	0.5000	0	0	0	0	NS	NS	0
WIMN	0.5000	0	1	0	15	NS	NS	16
REMSITES	1.0000	0	0	0	0	1	NS	1
SF	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	2	1	18	1	0	22

Database Radius Summary

TRIBAL LISTING

Standard environmental records are displayed in **bold**.

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR05	0.2500	0	0	0	NS	NS	NS	0
LUSTR05	0.5000	0	0	0	0	NS	NS	0
ODINDIAN	0.5000	0	0	0	0	NS	NS	0
INDIANRES	1.0000	0	0	0	0	0	NS	0

SUB-TOTAL		0						
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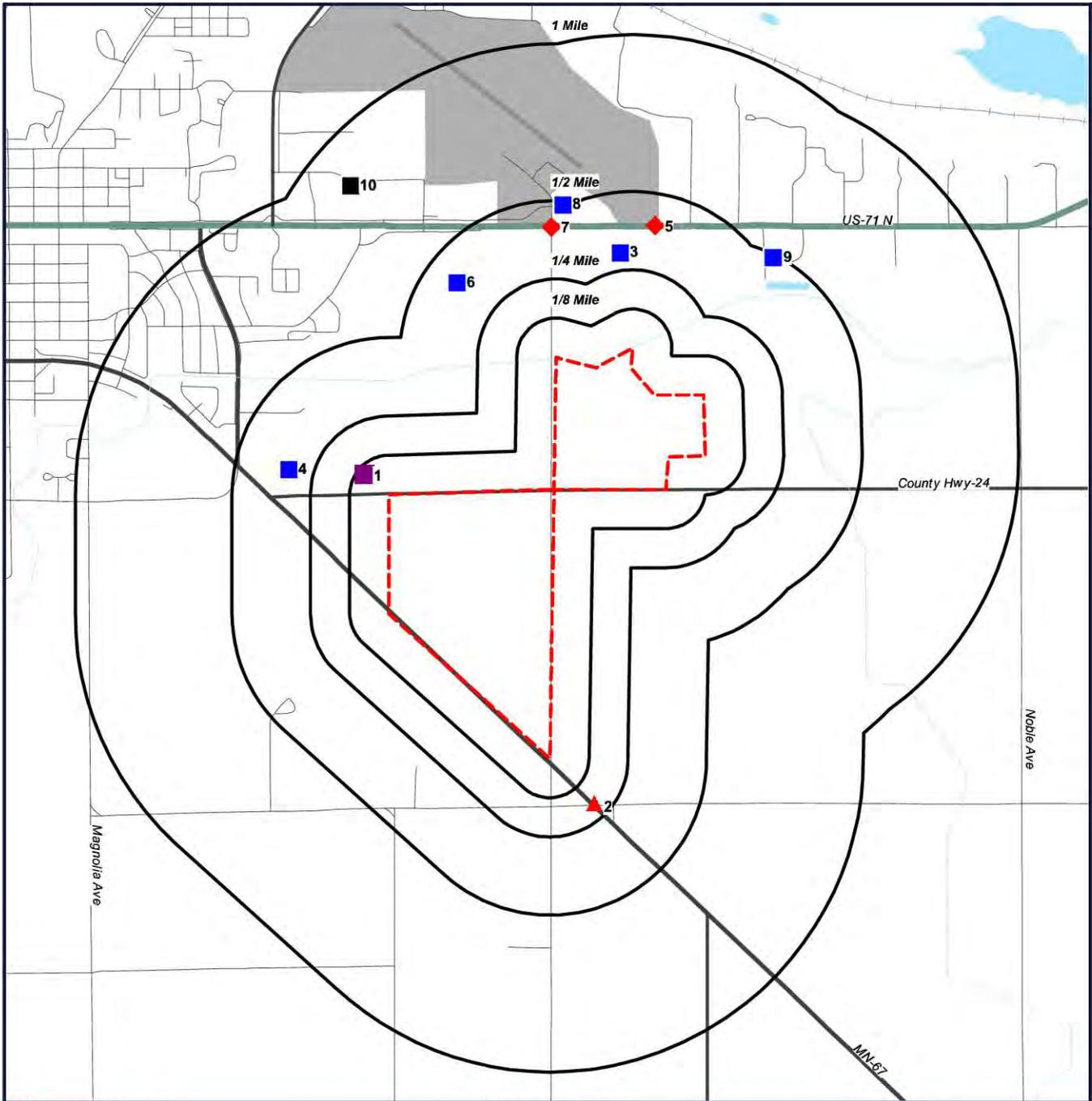
TOTAL		0	2	1	18	1	0	22
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NOTES:

NS = NOT SEARCHED

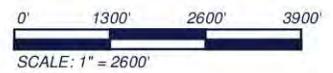
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1

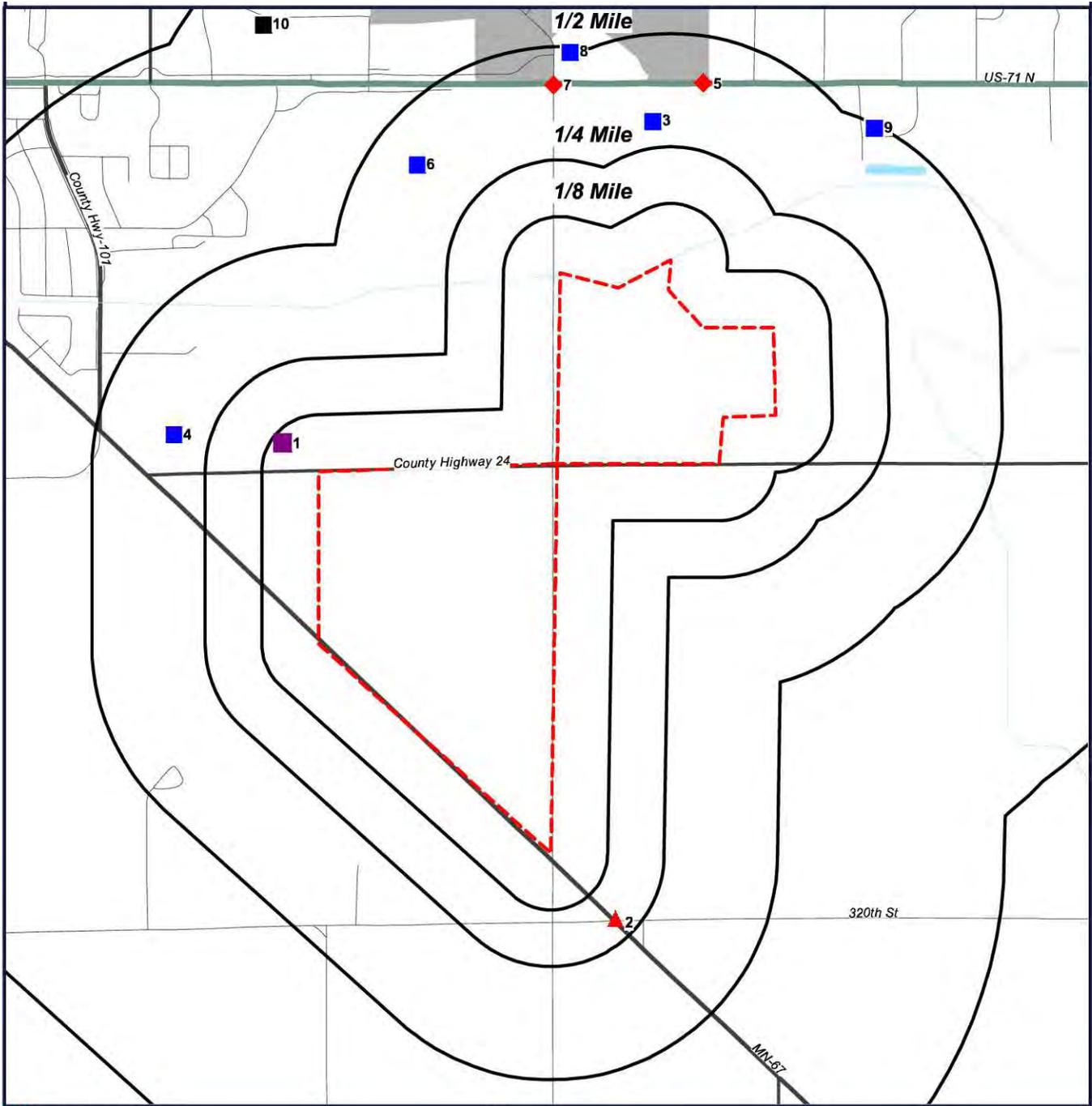


- Target Property (TP)
- WDP
- AGSPILLS
- WIMN
- LUAST2016
- LUAST
- REMSITES

**Residential
Development
County 1 and County
24
Redwood Falls,
Minnesota**

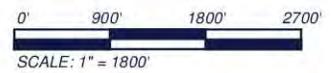


Radius Map 2

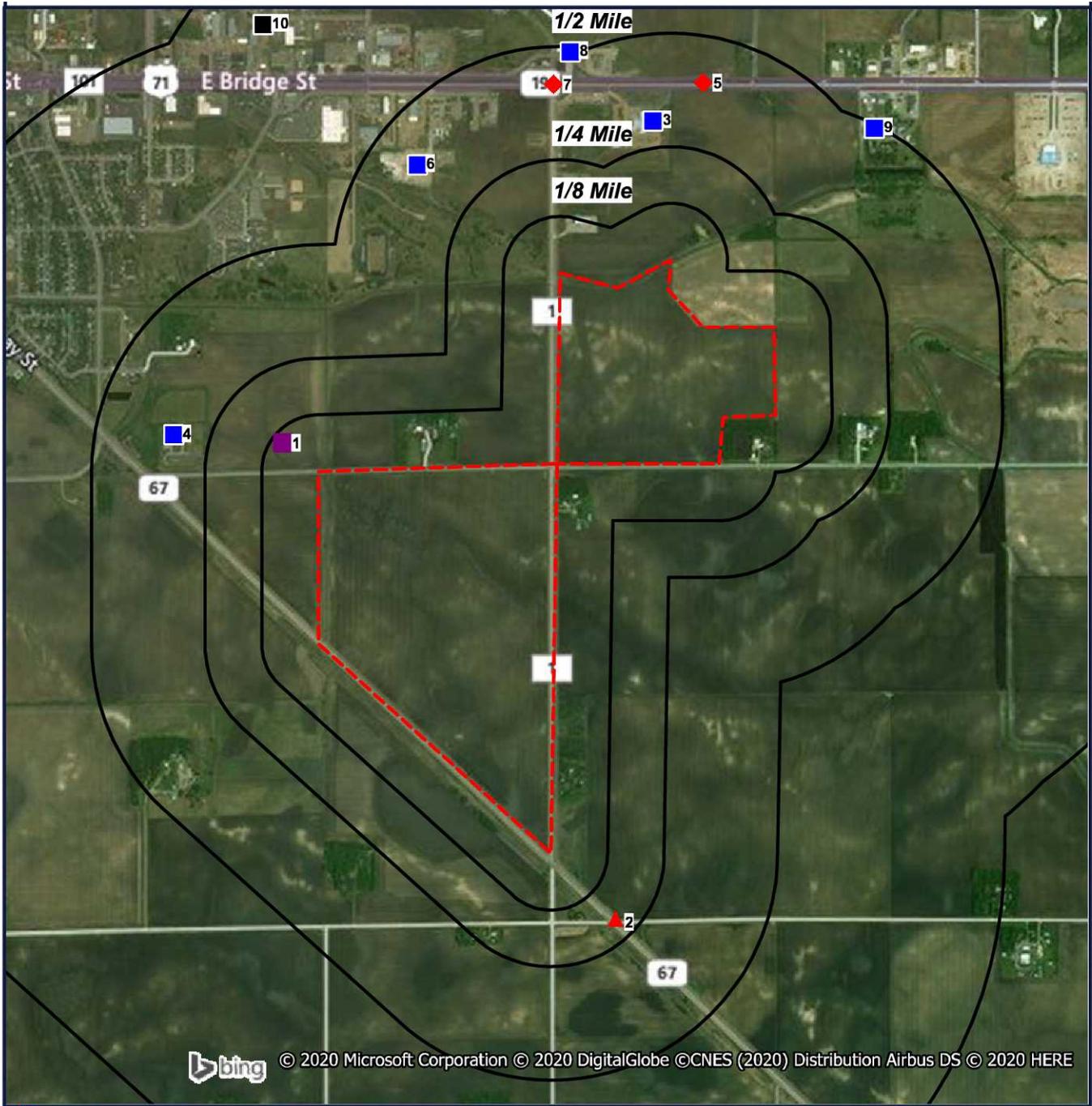


- Target Property (TP)
- WDP
- AGSPILLS
- WIMN
- LUAST2016
- LUAST
- REMSITES

**Residential
Development
County 1 and County
24
Redwood Falls,
Minnesota**

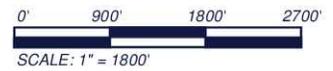


Ortho Map

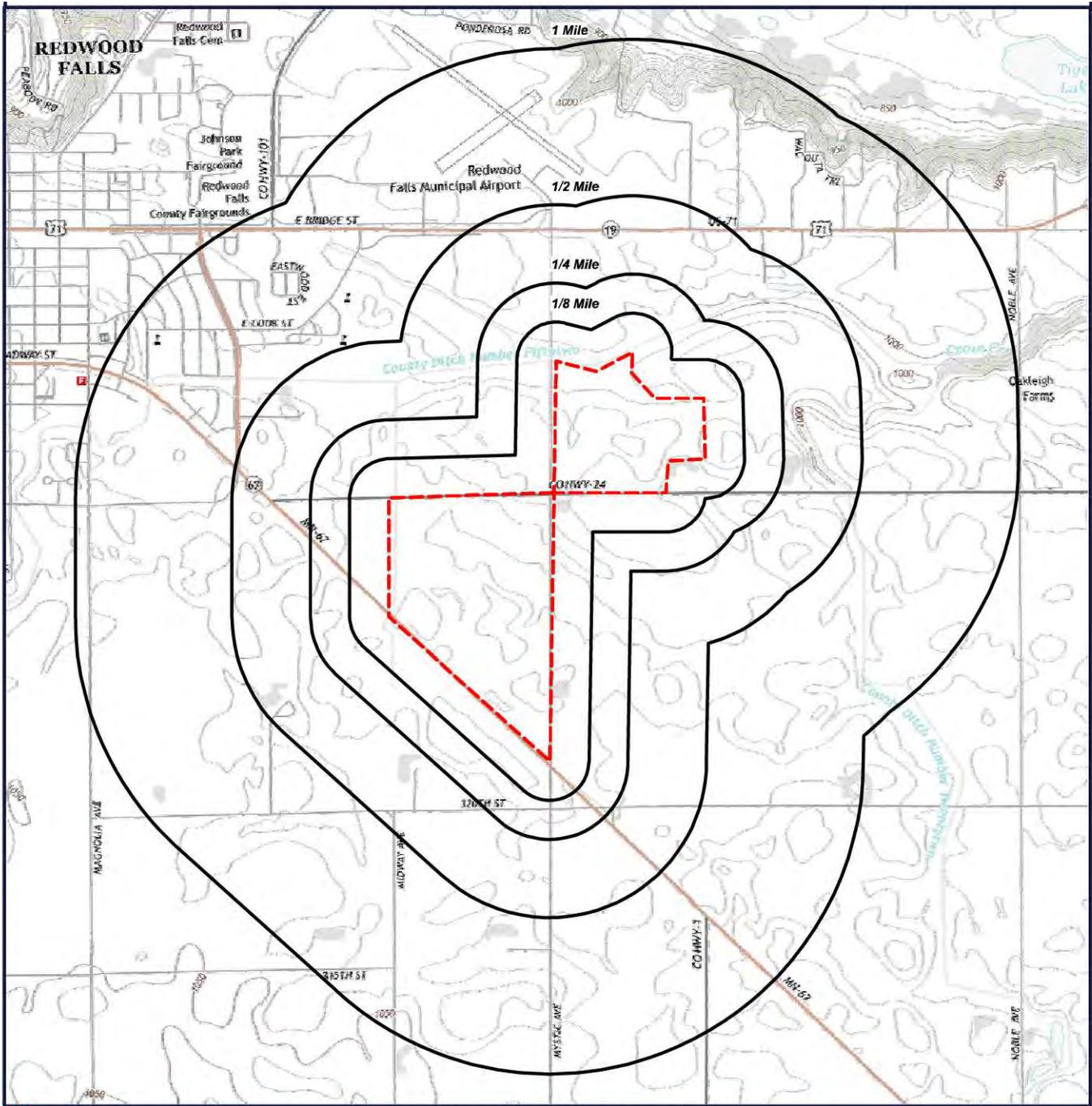


- Target Property (TP)
- WDP
- AGSPILLS
- WIMN
- LUAST2016
- LUAST
- REMSITES

Quadrangle(s):
Redwood Falls
Residential
Development
County 1 and County
24
Redwood Falls,
Minnesota

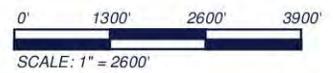


Topographic Map



 Target Property (TP)

Quadrangle(s): Redwood Falls
Source: USGS, 08/19/2013
Residential Development
County 1 and County 24
Redwood Falls, Minnesota



Located Sites Summary

NOTE: Standard environmental records are displayed in **bold**.

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
1	WDP	229266WDP	Lower (1,015 ft.)	0.101 mi. WNW (533 ft.)	CARRIS HEALTH REDWOOD	REDWOOD FALLS, MN 56283	16
1	WIMN	229266	Lower (1,015 ft.)	0.101 mi. WNW (533 ft.)	CARRIS HEALTH REDWOOD	REDWOOD FALLS, MN 56283	17
2	AGSPILLS	181101007145	Lower (1,024 ft.)	0.206 mi. SE (1088 ft.)	MEADOWLAND FARMERS COOP	REDWOOD COUNTY, REDWOOD FALLS, MN 56283	18
3	WIMN	138950	Lower (1,020 ft.)	0.311 mi. N (1642 ft.)	TITAN MACHINERY	ADDRESS UNKNOWN, REDWOOD FALLS, MN 56283	19
4	WIMN	131834	Lower (1,019 ft.)	0.342 mi. WNW (1806 ft.)	2009 CSAH 24 & ST. JOHN LUTHERAN SCHOOL	SEE LOCATION DESCRIPTION, REDWOOD FALLS, MN 56283	20
4	WIMN	150482	Lower (1,019 ft.)	0.330 mi. W (1742 ft.)	ST JOHNS ADDITION	34719 COUNTY HIGHWAY 24, REDWOOD FALLS, MN 56283	21
5	LUAST2016	10033LUAST	Lower (1,019 ft.)	0.396 mi. NNE (2091 ft.)	KIBBLE EQUIPMENT	HIGHWAY 19 & US 71 E, REDWOOD FALLS, MN 56283	22
6	WIMN	133611	Lower (1,018 ft.)	0.397 mi. WNW (2096 ft.)	REDWOOD FALLS READY MIX	210 CARIN CLOSE, REDWOOD FALLS, MN 56283	23
7	LUAST	112032LUAST	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	FORMER PIONEER SEED CO	HIGHWAYS 71 & 19, REDWOOD FALLS, MN 56283	24
7	LUAST	185626LUAST	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KIBBLE EQUIPMENT	HIGHWAY 19 & US 71 E, REDWOOD FALLS, MN 56283	26
7	WIMN	106608	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	DEKALB-PFIZER GENETICS	HIGHWAY 19 & 71 E PO BOX 216, REDWOOD FALLS, MN 56283	28
7	WIMN	112032	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	FORMER PIONEER SEED CO	HIGHWAYS 71 & 19, REDWOOD FALLS, MN 56283	29
7	WIMN	113174	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	SCOTT PREUSSE INC	HIGHWAY 19 & 71 E PO BOX 25, REDWOOD FALLS, MN 56283	30
7	WIMN	125381	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KIBBLE EQUIPMENT	PO BOX 250 HIGHWAYS 19 & 71 E, REDWOOD FALLS, MN 56283	31
7	WIMN	185626	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KIBBLE EQUIPMENT	HIGHWAY 19 & US 71 E, REDWOOD FALLS, MN 56283	32
7	WIMN	39428	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	A & W AGRI SYSTEM INC	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283	33
7	WIMN	39606	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KEI INC REDWOOD FALLS	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283	34
7	WIMN	40528	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	PIONEER HI BRED INTERNATIONAL INC - REDW	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283	35
7	WIMN	43762	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	PAMIDA INC	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283	36
8	WIMN	84786	Lower (1,015 ft.)	0.491 mi. N (2592 ft.)	AARONS AUTO BODY & GLASS	101 AIRPORT RD, REDWOOD FALLS, MN 56283	37
9	WIMN	56853	Lower (1,019 ft.)	0.494 mi. NE (2608 ft.)	JEFF SCHILLER FARM	36243 CROW CREEK LN, REDWOOD FALLS, MN 56283	38
10	REMSITES	16034	Lower (1,014 ft.)	0.855 mi. WNW (4514 ft.)	WARRIOR MFG LLC - REDWOOD FALLS	300 INDUSTRIAL DR, REDWOOD FALLS, MN 56283	39

Site Summary By Database

NOTE: Standard environmental records are displayed in **bold**.

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address
2	AGSPILLS	181101007145	Lower (1,024 ft.)	0.206 mi. SE (1088 ft.)	MEADOWLAND FARMERS COOP	REDWOOD COUNTY, REDWOOD FALLS, MN 56283
7	LUAST	112032LUAST	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	FORMER PIONEER SEED CO	HIGHWAYS 71 & 19, REDWOOD FALLS, MN 56283
7	LUAST	185626LUAST	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KIBBLE EQUIPMENT	HIGHWAY 19 & US 71 E, REDWOOD FALLS, MN 56283
5	LUAST2016	10033LUAST	Lower (1,019 ft.)	0.396 mi. NNE (2091 ft.)	KIBBLE EQUIPMENT	HIGHWAY 19 & US 71 E, REDWOOD FALLS, MN 56283
10	REMSITES	16034	Lower (1,014 ft.)	0.855 mi. WNW (4514 ft.)	WARRIOR MFG LLC - REDWOOD FALLS	300 INDUSTRIAL DR, REDWOOD FALLS, MN 56283
1	WDP	229266WDP	Lower (1,015 ft.)	0.101 mi. WNW (533 ft.)	CARRIS HEALTH REDWOOD	REDWOOD FALLS, MN 56283
1	WIMN	229266	Lower (1,015 ft.)	0.101 mi. WNW (533 ft.)	CARRIS HEALTH REDWOOD	REDWOOD FALLS, MN 56283
3	WIMN	138950	Lower (1,020 ft.)	0.311 mi. N (1642 ft.)	TITAN MACHINERY	ADDRESS UNKNOWN, REDWOOD FALLS, MN 56283
4	WIMN	131834	Lower (1,019 ft.)	0.342 mi. WNW (1806 ft.)	2009 CSAH 24 & ST. JOHN LUTHERAN SCHOOL	SEE LOCATION DESCRIPTION, REDWOOD FALLS, MN 56283
4	WIMN	150482	Lower (1,019 ft.)	0.330 mi. W (1742 ft.)	ST JOHNS ADDITION	34719 COUNTY HIGHWAY 24, REDWOOD FALLS, MN 56283
6	WIMN	133611	Lower (1,018 ft.)	0.397 mi. WNW (2096 ft.)	REDWOOD FALLS READY MIX	210 CARIN CLOSE, REDWOOD FALLS, MN 56283
7	WIMN	106608	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	DEKALB-PFIZER GENETICS	HIGHWAY 19 & 71 E PO BOX 216, REDWOOD FALLS, MN 56283
7	WIMN	112032	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	FORMER PIONEER SEED CO	HIGHWAYS 71 & 19, REDWOOD FALLS, MN 56283
7	WIMN	113174	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	SCOTT PREUSSE INC	HIGHWAY 19 & 71 E PO BOX 25, REDWOOD FALLS, MN 56283
7	WIMN	125381	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KIBBLE EQUIPMENT	PO BOX 250 HIGHWAYS 19 & 71 E, REDWOOD FALLS, MN 56283
7	WIMN	185626	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KIBBLE EQUIPMENT	HIGHWAY 19 & US 71 E, REDWOOD FALLS, MN 56283
7	WIMN	39428	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	A & W AGRI SYSTEM INC	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283
7	WIMN	39606	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	KEI INC REDWOOD FALLS	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283
7	WIMN	40528	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	PIONEER HI BRED INTERNATIONAL INC - REDW	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283
7	WIMN	43762	Lower (1,018 ft.)	0.415 mi. N (2191 ft.)	PAMIDA INC	HIGHWAY 19 & 71 E, REDWOOD FALLS, MN 56283
8	WIMN	84786	Lower (1,015 ft.)	0.491 mi. N (2592 ft.)	AARONS AUTO BODY & GLASS	101 AIRPORT RD, REDWOOD FALLS, MN 56283
9	WIMN	56853	Lower (1,019 ft.)	0.494 mi. NE (2608 ft.)	JEFF SCHILLER FARM	36243 CROW CREEK LN, REDWOOD FALLS, MN 56283

Water Discharge Permits (WDP)

[MAP ID# 1](#)

Distance from Property: 0.101 mi. (533 ft.) WNW
Elevation: 1,015 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 229266WDP
SITE ID: 229266
SITE NAME: CARRIS HEALTH REDWOOD
ADDRESS: NOT REPORTED
REDWOOD FALLS, MN 56283 REDWOOD
SITE URL: [click here](#)

FACILITY DETAILS

ID: C00053509
TYPE: CONSTRUCTION STORMWATER
WATERSHED: MINNESOTA RIVER - MANKATO
ACTIVE?: YES
INDUSTRY CLASSIFICATION: NOT REPORTED
INSTITUTIONAL CONTROLS: NO

ID: CS-GEN
TYPE: CONSTRUCTION STORMWATER
WATERSHED: MINNESOTA RIVER - MANKATO
ACTIVE?: NOT REPORTED
INDUSTRY CLASSIFICATION: NOT REPORTED
INSTITUTIONAL CONTROLS: NO

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What's In My Neighborhood Database (WIMN)

[MAP ID# 1](#)

Distance from Property: 0.101 mi. (533 ft.) WNW
Elevation: 1,015 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 229266

SITE ID: 229266

SITE NAME: CARRIS HEALTH REDWOOD

ADDRESS: NOT REPORTED

REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MULTIPLE IDS**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **C00053509; CS-GEN**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **ST**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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Agricultural Spills Listing (AGSPILLS)

[MAP ID# 2](#)

Distance from Property: 0.206 mi. (1,088 ft.) SE
Elevation: 1,024 ft. (Lower than TP)

SITE INFORMATION

ID #: 181101007145

CASE FILE #: PLK101052167

NAME: MEADOWLAND FARMERS COOP

LOCATION DESCRIPTION: PAXTON TWP

ADDRESS: REDWOOD COUNTY

REDWOOD FALLS, MN 56283

INVESTIGATION TYPE: EMERGENCY

INVESTIGATION STATUS: CLOSED

CONTAMINATION: PESTICIDES

DATE CLOSED: 9/24/2013

CONTACT INFORMATION

NAME: MDA DATA PRACTICES RECORDS MNG

PHONE: (651) 201-6698

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What's In My Neighborhood Database (WIMN)

MAP ID# 3

Distance from Property: 0.311 mi. (1,642 ft.) N
Elevation: 1,020 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 138950

SITE ID: 138950

SITE NAME: TITAN MACHINERY

ADDRESS: ADDRESS UNKNOWN

REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **C00033415**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **C00033415**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **ST**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 4

Distance from Property: 0.342 mi. (1,806 ft.) WNW
Elevation: 1,019 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 131834

SITE ID: 131834

SITE NAME: 2009 CSAH 24 & ST. JOHN LUTHERAN SCHOOL

ADDRESS: SEE LOCATION DESCRIPTION
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **C00028862**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **C00028862**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **ST**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 4

Distance from Property: 0.330 mi. (1,742 ft.) W
Elevation: 1,019 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 150482

SITE ID: 150482

SITE NAME: ST JOHNS ADDITION

ADDRESS: 34719 COUNTY HIGHWAY 24
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **CONSTRUCTION STORMWATER**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **C00040684**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **C00040684**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **ST**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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Registered Leaking Storage Tanks Prior to April 2016 (LUAST2016)

MAP ID# 5

Distance from Property: 0.396 mi. (2,091 ft.) NNE
Elevation: 1,019 ft. (Lower than TP)

SITE INFORMATION

GEOSEARCH ID: 10033LUAST
LEAK ID: 10033
NAME: KIBBLE EQUIPMENT
ADDRESS: HIGHWAY 19 & US 71 E
REDWOOD FALLS, MN 56283
RELEASE DISCOVERED: 04/18/1997 00:00:00
RELEASE REPORT: 04/21/1997 00:00:00
CONDITIONAL CLOSURE DATE: NOT REPORTED
COMPLETE SITE CLOSURE DATE: 06/20/2002 00:00:00
COMTAMINATED SOILS REMAINING: YES
OFFSITE COMTAMINATION: NO
PRODUCT RELEASED: FUEL OIL 1 & 2

GROUND WATER

DRINKING WATER CONTAMINATION: NOT REPORTED
FREE PRODUCT OBSERVED: NO
FREE PRODUCT THICKNESS: NOT REPORTED
GROUNDWATER CONTAMINATION: YES

CLEANUP ACTIONS

CODE: LEAK ACTION DESCRIPTION:
21 RI MONITORING
APPROVAL DATE: NOT REPORTED
BEGIN DATE: 12/11/1997 00:00:00
END DATE: 08/09/2001 00:00:00
PRODUCT RECOVERED IN GALLONS: NOT REPORTED
PRODUCT REMOVED IN GALLONS: NOT REPORTED
TREATED WATER IN GALLONS: NOT REPORTED

CODE: LEAK ACTION DESCRIPTION:
1 PASSIVE FREE PRODUCT COLLECTOR
APPROVAL DATE: NOT REPORTED
BEGIN DATE: 09/21/1998 00:00:00
END DATE: 08/10/2001 00:00:00
PRODUCT RECOVERED IN GALLONS: 4
PRODUCT REMOVED IN GALLONS: 4
TREATED WATER IN GALLONS: NOT REPORTED

INTEREST TYPE:

LEAK SITE

DELETED LEAK SITE

LAST UPDATE:

11/10/2014 08:17:05

11/29/2006 08:17:42

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What's In My Neighborhood Database (WIMN)

MAP ID# 6

Distance from Property: 0.397 mi. (2,096 ft.) WNW
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 133611

SITE ID: 133611

SITE NAME: REDWOOD FALLS READY MIX

ADDRESS: 210 CARIN CLOSE

REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **INDUSTRIAL STORMWATER; WASTEWATER**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MNR0533ZS**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MNR0533ZS**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **ST; WW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **MULTIPLE PROGRAMS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **STORMWATER;**

WATER QUALITY

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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Registered Leaking Storage Tanks (LUAST)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: 112032LUAST
AGENCY INTEREST(AI) ID: 112032
ITEM ID: 112032-AREA0000000001
AGENCY INTEREST(AI) NAME: FORMER PIONEER SEED CO
ADDRESS: HIGHWAYS 71 & 19
REDWOOD FALLS, MN 56283
COUNTY: REDWOOD
LOCATION DESCRIPTION: NOT REPORTED
SITE URL: [LINK](#)

FACILITY DETAILS

TYPE OF REMEDIATION SITE: LEAK SITE
SITE ID: LS0007341
SITE NAME: FORMER PIONEER SEED CO
ACREAGE FOR THIS PROJECT: NOT REPORTED
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: NOT REPORTED
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: KIM GREGG (NO LONGER AT MPCA)
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: NOT REPORTED
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: NOT REPORTED
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: NOT REPORTED
WAS THIS AN UNPERMITTED DUMP?: NOT REPORTED
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: NOT REPORTED
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): NOT REPORTED
YEAR FOR THE HRS SCORE: NOT REPORTED
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: SIW19910001
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: LEAK SITE INVESTIGATION
RELEASE DISCOVERED: 12/9/1991
RELEASE REPORTED: 12/9/1991
DATE THE APPLICATION / NOTIFICATION RECEIVED: NOT REPORTED
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): NOT REPORTED
SITE CLOSURE DATE: 3/24/1992
FUND FINANCE APPROVED: NOT REPORTED
FUND FINANCE CLOSED: NOT REPORTED
ASSESSMENT COMPLETED: NOT REPORTED
INVESTIGATION COMPLETED: NOT REPORTED
NO FURTHER ACTION DECISION: NOT REPORTED
REMEDY IMPLEMENTED: NOT REPORTED

Registered Leaking Storage Tanks (LUAST)

REMEDY SELECTED: **NOT REPORTED**

STATUS OF THE SITE: **CLOSED**

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Registered Leaking Storage Tanks (LUAST)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: 185626LUAST
AGENCY INTEREST(AI) ID: 185626
ITEM ID: 185626-AREA0000000001
AGENCY INTEREST(AI) NAME: KIBBLE EQUIPMENT
ADDRESS: HIGHWAY 19 & US 71 E
REDWOOD FALLS, MN 56283
COUNTY: REDWOOD
LOCATION DESCRIPTION: NOT REPORTED
SITE URL: [LINK](#)

FACILITY DETAILS

TYPE OF REMEDIATION SITE: LEAK SITE
SITE ID: LS0010033
SITE NAME: KIBBLE EQUIPMENT
ACREAGE FOR THIS PROJECT: NOT REPORTED
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: JOHN VIGNA (NO LONGER AT MPCA)
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: NANCY HENNEN (FORMER)
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: NOT REPORTED
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: NOT REPORTED
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: NOT REPORTED
WAS THIS AN UNPERMITTED DUMP?: NOT REPORTED
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: NOT REPORTED
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): NOT REPORTED
YEAR FOR THE HRS SCORE: NOT REPORTED
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: SIW19970001
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: LEAK SITE INVESTIGATION
RELEASE DISCOVERED: 4/18/1997
RELEASE REPORTED: 4/21/1997
DATE THE APPLICATION / NOTIFICATION RECEIVED: NOT REPORTED
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): NOT REPORTED
SITE CLOSURE DATE: 6/20/2002
FUND FINANCE APPROVED: NOT REPORTED
FUND FINANCE CLOSED: NOT REPORTED
ASSESSMENT COMPLETED: NOT REPORTED
INVESTIGATION COMPLETED: NOT REPORTED
NO FURTHER ACTION DECISION: NOT REPORTED
REMEDY IMPLEMENTED: NOT REPORTED

Registered Leaking Storage Tanks (LUAST)

REMEDY SELECTED: **NOT REPORTED**

STATUS OF THE SITE: **CLOSED**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: **106608**

SITE ID: **106608**

SITE NAME: **DEKALB-PFIZER GENETICS**

ADDRESS: **HIGHWAY 19 & 71 E PO BOX 216
REDWOOD FALLS, MN 56283 REDWOOD**

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **UNDERGROUND TANKS**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **UNDERGROUND TANKS**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **TS0008929**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TS0008929**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TL**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N

Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 112032

SITE ID: 112032

SITE NAME: FORMER PIONEER SEED CO

ADDRESS: HIGHWAYS 71 & 19
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **PETROLEUM REMEDIATION, LEAK SITE;**

UNDERGROUND TANKS

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MULTIPLE IDS**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **LS0007341; TS0016021**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **SR; TL**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **MULTIPLE PROGRAMS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **INVESTIGATION**

AND CLEANUP; TANKS

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 113174

SITE ID: 113174

SITE NAME: **SCOTT PREUSSE INC**

ADDRESS: **HIGHWAY 19 & 71 E PO BOX 25**
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **ABOVEGROUND TANKS; UNDERGROUND TANKS**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **TS0052709**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TS0052709**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TL**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 125381

SITE ID: 125381

SITE NAME: KIBBLE EQUIPMENT

ADDRESS: PO BOX 250 HIGHWAYS 19 & 71 E
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **ABOVEGROUND TANKS; UNDERGROUND TANKS**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **TS0008959**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TS0008959**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TL**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **TANKS**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 185626

SITE ID: 185626

SITE NAME: KIBBLE EQUIPMENT

ADDRESS: HIGHWAY 19 & US 71 E

REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **PETROLEUM REMEDIATION, LEAK SITE**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **PETROLEUM REMEDIATION, LEAK SITE**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **LS0010033**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **LS0010033**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **SR**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **INVESTIGATION AND CLEANUP**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **INVESTIGATION AND CLEANUP**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 39428

SITE ID: 39428

SITE NAME: A & W AGRI SYSTEM INC

ADDRESS: HIGHWAY 19 & 71 E
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MNL526**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MNL526**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

[MAP ID# 7](#)

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 39606

SITE ID: 39606

SITE NAME: KEI INC REDWOOD FALLS

ADDRESS: HIGHWAY 19 & 71 E
REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MND985758150**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MND985758150**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **FARM AND GARDEN MACHINERY AND EQUIPMENT**

MERCHANT WHOLESALERS

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N
Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 40528

SITE ID: 40528

SITE NAME: PIONEER HI BRED INTERNATIONAL INC - REDW

ADDRESS: HIGHWAY 19 & 71 E

REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MND985761782**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MND985761782**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NURSERY, GARDEN CENTER, AND FARM SUPPLY**

STORES

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 7

Distance from Property: 0.415 mi. (2,191 ft.) N

Elevation: 1,018 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 43762

SITE ID: 43762

SITE NAME: PAMIDA INC

ADDRESS: HIGHWAY 19 & 71 E

REDWOOD FALLS, MN 56283 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **HAZARDOUS WASTE**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MND985770403**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **MND985770403**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **HAZARDOUS WASTE**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **MISCELLANEOUS RETAIL**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 8

Distance from Property: 0.491 mi. (2,592 ft.) N
Elevation: 1,015 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: **84786**

SITE ID: **84786**

SITE NAME: **AARONS AUTO BODY & GLASS**

ADDRESS: **101 AIRPORT RD
REDWOOD FALLS, MN 56283-2838 REDWOOD**

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **MULTIPLE ACTIVITIES**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **AIR QUALITY; HAZARDOUS WASTE, VERY SMALL QUANTITY GENERATOR**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **MULTIPLE IDS**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **12700056; MNS000106864**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **AQ; HW**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **MULTIPLE PROGRAMS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **AIR QUALITY; HAZARDOUS WASTE**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **AUTOMOTIVE BODY, PAINT, AND INTERIOR REPAIR AND MAINTENANCE**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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What's In My Neighborhood Database (WIMN)

MAP ID# 9

Distance from Property: 0.494 mi. (2,608 ft.) NE
Elevation: 1,019 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: 56853

SITE ID: 56853

SITE NAME: JEFF SCHILLER FARM

ADDRESS: 36243 CROW CREEK LN
REDWOOD FALLS, MN 56283-2754 REDWOOD

SITE URL: [click here](#)

FACILITY DETAILS

MPCA ACTIVITY OF INTEREST AT THE SITE: **FEEDLOTS**

COMMA-DELIMITED LIST OF MPCA ACTIVITIES OF INTEREST AT THE SITE: **FEEDLOTS**

MPCA ID ASSOCIATED WITH AN ACTIVITY AT THE SITE: **127-62689**

COMMA-DELIMITED LIST OF MPCA IDS ASSOCIATED WITH ACTIVITIES AT THE SITE: **127-62689**

COMMA-DELIMITED LIST OF CODES FOR PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **FE**

NAME OF THE MPCA PROGRAM ASSOCIATED WITH ACTIVITIES AT THE SITE: **FEEDLOTS**

COMMA-DELIMITED LIST OF NAMES OF MPCA PROGRAMS ASSOCIATED WITH ACTIVITIES AT THE SITE: **FEEDLOTS**

PRIMARY INDUSTRIAL CLASSIFICATION ASSOCIATED WITH THE SITE: **NOT REPORTED**

INDICATES THE PRESENCE OF INSTITUTIONAL CONTROLS AT THE SITE: **NO**

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MPCA Remediation Sites (REMSITES)

MAP ID# 10

Distance from Property: 0.855 mi. (4,514 ft.) WNW
Elevation: 1,014 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: 16034
AGENCY INTEREST(AI) ID: 16034
ITEM ID: 16034-AREA0000000001
AGENCY INTEREST(AI) NAME: WARRIOR MFG LLC - REDWOOD FALLS
ADDRESS: 300 INDUSTRIAL DR
REDWOOD FALLS, MN 56283
COUNTY: REDWOOD
LOCATION DESCRIPTION: NOT REPORTED
SITE URL: [LINK](#)

FACILITY DETAILS

TYPE OF REMEDIATION SITE: BROWNFIELD SITE
SITE ID: PB3379
SITE NAME: WARRIOR MANUFACTURING
ACREAGE FOR THIS PROJECT: NOT REPORTED
MPCA HYDROGEOLOGIST OR HYDROLOGIST ASSIGNED TO THE SITE: NOT REPORTED
MPCA PROJECT MANAGER ASSIGNED TO THE SITE: NOT REPORTED
HAS THIS SITE EVER BEEN LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST)?: NOT REPORTED
HAS THIS SITE EVER BEEN LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST)?:
NOT REPORTED
FOR BROWNFIELDS, IS THIS A PETROLEUM BROWNFIELD?: YES
FOR BROWNFIELDS, IS THIS A NON-PETROLEUM BROWNFIELD AKA VOLUNTARY INVESTIGATION AND CLEANUP (VIC) SITE?:
NOT REPORTED
WAS THIS LISTED ON EPA'S CERCLIS/SEMS LIST?: NOT REPORTED
WAS THIS AN UNPERMITTED DUMP?: NOT REPORTED
TO OUR KNOWLEDGE, ARE THERE INSTITUTIONAL CONTROLS AT THIS SITE?: NOT REPORTED
SCORE FOR THIS SITE, USING THE US EPA'S HAZARD RANKING SYSTEM (HRS): NOT REPORTED
YEAR FOR THE HRS SCORE: NOT REPORTED
UNIQUE ID FOR AN INVESTIGATION PROJECT THAT INVOLVED THIS SITE: SIW20020001
DESCRIPTION FOR THE KIND OF INVESTIGATION PROJECT: BROWNFIELD SITE
RELEASE DISCOVERED: NOT REPORTED
RELEASE REPORTED: NOT REPORTED
DATE THE APPLICATION / NOTIFICATION RECEIVED: NOT REPORTED
DATE THIS SITE WAS LISTED ON THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS DELISTED FROM THE PERMANENT LIST OF PRIORITIES (THE STATE SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS LISTED ON THE NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): NOT REPORTED
DATE THIS SITE WAS DELETED FROM NATIONAL PRIORITIES LIST (THE FEDERAL SUPERFUND LIST): NOT REPORTED
SITE CLOSURE DATE: 1/1/2007
FUND FINANCE APPROVED: NOT REPORTED
FUND FINANCE CLOSED: NOT REPORTED
ASSESSMENT COMPLETED: NOT REPORTED
INVESTIGATION COMPLETED: NOT REPORTED
NO FURTHER ACTION DECISION: NOT REPORTED
REMEDY IMPLEMENTED: NOT REPORTED

MPCA Remediation Sites (REMSITES)

REMEDY SELECTED: **NOT REPORTED**

STATUS OF THE SITE: **CLOSED**

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Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

No Records Found

Environmental Records Definitions - FEDERAL

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 02/25/20

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DOCKETS EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 02/26/20

This database includes site locations where Engineering and/or Institutional Controls have been identified as part of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. The data displays remedy component information for Superfund decision documents issued in fiscal years 1982-2017, and it includes final and deleted NPL sites as well as sites with a Superfund Alternative Approach (SAA) agreement in place. The only sites included that are not on the NPL, proposed for NPL, or removed from proposed NPL, are those with an SAA Agreement in place. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR05 Enforcement and Compliance History Information

VERSION DATE: 10/27/19

The U.S. Environmental Protection Agency's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

Environmental Records Definitions - FEDERAL

ERNSMN Emergency Response Notification System

VERSION DATE: 04/05/20

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

HMIRSR05 Hazardous Materials Incident Reporting System

VERSION DATE: 11/20/19

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 5. Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

HWCD Hazardous Waste Compliance Docket Facilities

VERSION DATE: 04/29/19

This list of the Federal Agency Hazardous Waste Compliance Docket Facilities is maintained by the United States Environmental Protection Agency (EPA). According to the EPA, Section 120(c) of CERCLA requires EPA to establish a listing, known as the Federal Facility Hazardous Waste Compliance Docket (Docket), of Federal facilities which are managing or have managed hazardous waste; or have had a release of hazardous waste. Thus, the Docket identifies all Federal facilities that must be evaluated to determine whether they pose a risk to human health and the environment and it makes this information available to the public. In order for the Docket to remain current and accurate it requires periodic updating.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 03/28/20

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 03/23/20

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

Environmental Records Definitions - FEDERAL

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 03/23/20

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

RCRASC RCRA Sites with Controls

VERSION DATE: 02/21/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

SEMCLIENS SEMS Lien on Property

VERSION DATE: 03/23/20

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete. Please refer to the SEMCLIENS database as source of current data.

SSEHRIPFAS SSEHRI PFAS Contamination Sites

VERSION DATE: 12/12/19

This PFAS Contamination Site Tracker database is compiled by the Social Science Environmental Health Research Institute (SSEHRI) at Northeastern University. According to the SSEHRI, the database records

Environmental Records Definitions - FEDERAL

qualitative and quantitative data from each known site of PFAS contamination, including timeline of discovery, sources, levels, health impacts, community response, and government response. The goal of this database is to compile information and support public understanding of the rapidly unfolding issue of PFAS contamination. All data presented was extracted from government websites, news articles, or publicly available documents, and this is cited in the tracker. Disclaimer: The source conveys this database undergoes regular updates as new information becomes available, some sites may be missing and/or contain information that is incorrect or outdated, as well as their information represents all contamination sites SSEHRI is aware of, not all possible contamination sites. This data is not intended to be used for legal purposes. Limited location details are available with this data. Please access the following source link for the most current information:
<https://pfasproject.com/pfas-contamination-site-tracker/>

TRI Toxics Release Inventory

VERSION DATE: 12/31/18

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/16

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency (EPA) authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site. The EPA has collected Chemical Data Reporting (CDR) data since in 1986 (as Inventory Update Reporting). Collections occur approximately every four years and reporting requirements changed from collection to collection.

RCRAGR05 Resource Conservation & Recovery Act - Generator

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

Environmental Records Definitions - FEDERAL

ALTFUELS Alternative Fueling Stations

VERSION DATE: 04/30/20

Nationwide list of alternative fueling stations made available by the U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Bio-diesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

FEMAUST FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

HISTPST Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

ICISCLEANERS Integrated Compliance Information System Drycleaners

VERSION DATE: 03/28/20

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The U.S. Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments. The following Primary SIC Codes are included in this data: 7211, 7212, 7213, 7215, 7216, 7217, 7218, and/or 7219; the following Primary NAICS Codes are included in this data: 812320, 812331, and/or 812332.

MRDS Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 09/20/19

Environmental Records Definitions - FEDERAL

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

BF Brownfields Management System

VERSION DATE: 04/09/20

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

DNPL Delisted National Priorities List

VERSION DATE: 04/22/20

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

SEMS Superfund Enterprise Management System

VERSION DATE: 04/23/20

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 04/23/20

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System Archived Site Inventory (List 8R Archived) replaced the CERCLIS NFRAP reporting system in 2015. This listing reflects sites at which the EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program.

Environmental Records Definitions - FEDERAL

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPL National Priorities List

VERSION DATE: 04/22/20

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 04/22/20

Environmental Records Definitions - FEDERAL

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

RCRASUBC Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

Environmental Records Definitions - STATE (MN)

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 01/13/20

This listing of clandestine methamphetamine laboratories is provided by the Minnesota Department of Health. Each meth lab, spill or dump is a potential hazardous waste site, requiring assessment and remediation by experienced and qualified personnel. Former meth lab sites are being cleaned (or remediated) in many Minnesota communities. In these communities, the cleanups are being guided by city and county ordinances, local housing laws, and Minnesota Statute 145A, the Public Health Nuisance Statute.

CSTF Contaminated Soil Treatment Facilities

VERSION DATE: 01/26/20

Contaminated soil treatment facilities are places that the Minnesota Pollution Control Agency (MPCA) has approved or permitted to take petroleum-contaminated soils from leak sites and provide treatment through a number of different processes. The processes include thermal treatment (usually by roasting soils at high temperatures), composting, or thin-spreading soils and allowing natural microorganisms to biodegrade the petroleum.

IC Sites with Institutional Controls

VERSION DATE: 04/26/20

Institutional controls are defined by Minnesota Statute, Section 115B.02, subdivision 9a, as legally enforceable restrictions, conditions, or controls on the use of real property, ground water, or surface water located at or adjacent to a facility where response actions are taken that are reasonably required to assure that the response actions are protective of public health or welfare or the environment. Institutional controls include restrictions, conditions, or controls enforceable by contract, easement, restrictive covenant, statute, ordinance, or rule, including official controls such as zoning, building codes, and official maps. An affidavit required under section 115B.16, subdivision 2, or similar notice of a release recorded with real property records is also an institutional control.

PCASPILLS Spills Listing

VERSION DATE: 12/03/19

The Minnesota Pollution Control Agency's Emergency Response Team maintains this listing of reported petroleum product, hazardous substance, and/or other spills.

TIERII Tier Two Facility Listing

VERSION DATE: 05/08/19

The Minnesota Department of Public Safety's Emergency Planning and Community Right-to-Know Act Program (EPCRA) maintains this listing of Tier Two facilities which store hazardous chemicals on-site. These facilities subject to EPCRA reporting submit Tier II forms which provide information such as the Material Safety Data

Environmental Records Definitions - STATE (MN)

Sheet (MSDS) chemical or common name, emergency contact information, approximate amount of chemical stored, along with the location of the chemical at the facility.

HWCS Hazardous Waste Cleanup Sites

VERSION DATE: 04/28/20

Soil and or groundwater cleanup under RCRA Corrective Action is conducted by the Site Remediation Division of the Minnesota Pollution Control Agency. The Hazardous Waste Treatment, Storage, or Disposal Facilities enter the RCRA corrective action program through the permitting process. Interim Status Facilities enter the RCRA Correction Action Program through a negotiated process initiated by the MPCA (these facilities at one time applied for a RCRA treatment, storage and or disposal permit, but did not complete the permitting process). Hazardous Waste Generators usually enter the RCRA remediation program through evidence of suspected releases to soil and or ground water from improper management of hazardous wastes or hazardous constituents uncovered during hazardous waste inspections conducted by state, county or city inspectors.

WDP Water Discharge Permits

VERSION DATE: 01/26/20

This Minnesota Pollution Control Agency (MPCA) database includes the following types of water permits: Construction Stormwater Permits, Construction Stormwater Site Subdivisions, Industrial Stormwater Permits, MS4 Projects, and Wastewater Dischargers. A construction stormwater permit is designed to limit pollution during and after construction by controlling the erosion associated with construction activities. A construction stormwater site subdivision is a site where a construction project with an existing stormwater permit has been sub-divided into smaller parcels. Industrial stormwater permits are designed to limit the amount of harmful contaminants that reach surface water and groundwater, by requiring good practices for storing and handling materials. A Municipal Separate Storm Sewer System (MS4) is a system of conveyances - such as gutters, ditches, city streets and storm drains - which is used as a path for stormwater. Regulated MS4s cover large areas, and are owned or operated by a public entity such as a city, county, township, watershed district or university. A wastewater discharger is a facility that generates or treats wastewater for discharge onto land or into water.

BULKSTORAGE Bulk Storage Permits

VERSION DATE: 08/28/19

The Minnesota Department of Agriculture's Licensing Information System (LIS) lists individuals or companies who hold licenses, certificates and/or permits required by state law and regulated by the Department. This database only contains those LIS licenses related to anhydrous ammonia storage facilities and bulk pesticide/fertilizer storage facilities. Please note the data is real time and therefore constantly changing.

UAST Registered Storage Tanks

VERSION DATE: 04/13/20

The Registered Storage Tanks Database provides information on aboveground and underground storage tanks

Environmental Records Definitions - STATE (MN)

registered with the Minnesota Pollution Control Agency. Owners of USTs and ASTs with a capacity of 500 gallons or more which contain petroleum or hazardous substances must notify the MPCA of the existence of these tanks. Tanks not subject to notification include farm and residential motor fuel tanks less than 1,100 gallons; heating oil tanks less than 1,100 gallons; flow-through process tanks; septic tanks; and agricultural chemical tanks. Some of the data included reflects storage tanks reported in the old "TALES" database. New data reported here is from the MPCA's new "TEMPO" database.

AGSPILLS

Agricultural Spills Listing

VERSION DATE: 02/07/20

This list of reported spill incidents is provided by the Minnesota Department of Agriculture (MDA). The MDA is the lead agency for response to, and cleanup of, agricultural chemical contamination (pesticides and fertilizers) in Minnesota. The MDA has grouped these spills into three categories: Old Emergencies, Small Spills and Investigations, and Investigations Boundaries. Old Emergencies represent emergencies which were closed prior to March 1, 2004. These files and the locations plotted have not been reviewed for accuracy and completeness. Small Spills and Investigations represent the location of small spills and investigations, which were closed after March 1, 2004. Investigation Boundaries represent the approximate extent of large spills and other types of facility investigations. Facility Investigations are further subdivided into the following program areas: Awaiting Prioritization Investigation files of known or potential agricultural chemical contamination that are waiting to be prioritized; Prioritized Investigation files of known or potential agricultural chemical contamination that have been prioritized and are awaiting activation; Comprehensive Facility Investigation/MERLA Investigation files of known or potential agricultural chemical contamination that have been activated in MDA's Comprehensive Facility Investigation Program or are active Superfund sites under MDA's oversight; AgVIC Investigation files of known or potential agricultural chemical contamination that have enrolled in the MDA's Agricultural Voluntary Investigation and Cleanup (AgVIC) Program; and Agricultural Chemical Emergency Response Investigation files that were reported as emergency spills of agricultural chemicals and are large enough in size to be represented by a polygon.

CERCLIS

CERCLIS Sites

VERSION DATE: 03/02/20

CERCLIS sites are places that are listed in the federal Comprehensive Environmental Response, Compensation and Liability Information System. This means that they are or were suspected of being contaminated. The CERCLIS database contains information on preliminary assessments, site inspections, and cleanup activities for these sites. After CERCLIS sites are investigated, they may be elevated to state or federal Superfund lists, or it may be determined that no action is necessary. This database is provided by the Minnesota Pollution Control Agency.

CLF

Closed Landfills

VERSION DATE: 03/29/20

This database includes closed solid waste facilities and sites that have been entered into the PCA's Closed Landfill Program (CLP). The CLP is a voluntary program established by the legislature in 1994 to properly close,

Environmental Records Definitions - STATE (MN)

monitor, and maintain Minnesota's closed municipal sanitary landfills. Any MPCA-permitted mixed-municipal solid waste landfill that stopped accepting mixed municipal solid waste (MMSW) by April 9, 1994, and demolition debris before May 1, 1995, can qualify for application to this program.

CONTINGENCIES

Agricultural Contingency Sites

VERSION DATE: 02/09/20

The Minnesota Department of Agriculture (MDA) Incident Response Unit (IRU) is the state lead agency for the investigation and remediation of incidents involving agricultural chemicals (pesticides and fertilizer). This MDA IRU database includes sites with a soil or ground water contingency, deed restriction, local ordinance, restrictive covenant or deed affidavit in place. The accuracy of these sites can be variable. In most cases, the site boundaries should be considered as only representing the vicinity of the soil or ground water contingency area or plume.

HWSTSD

Hazardous Waste Treatment Storage Disposal Sites

VERSION DATE: 03/01/20

A hazardous waste Treatment Storage and /or Disposal facility (TSD) is any business designed to treat, store and / or dispose of hazardous waste. These facilities typically collect hazardous wastes for other businesses and treat it or dispose of it properly. TSD facilities must have valid operating permits issued by the Minnesota Pollution Control Agency (MPCA). This means that they are required to develop detailed plans to train and protect their workers and the environment. This database contains active and inactive TSD facilities.

LUAST

Registered Leaking Storage Tanks

VERSION DATE: 01/24/20

The Minnesota Pollution Control Agency maintains this listing of leaking aboveground and underground storage tanks. Tank owners are required to immediately report a leak or spill of more than five gallons of petroleum, or any amount of a hazardous substance, from any tank or piping. All leaks and spills from USTs and ASTs and associated piping must be cleaned up to protect the environment and public health. In April of 2016, the MPCA Remediation Programs began utilizing a new data management system and completed this transition in 2018. Please note that select data may be incomplete for sites migrated from the prior data management system, refer to LUAST2016 as an additional leaking storage tank data source.

LUAST2016

Registered Leaking Storage Tanks Prior to April 2016

VERSION DATE: 04/01/16

The Minnesota Pollution Control Agency maintains this listing of leaking aboveground and underground storage tanks registered with the MPCA through April of 2016. Tank owners are required to immediately report a leak or spill of more than five gallons of petroleum, or any amount of a hazardous substance, from any tank or piping. All leaks and spills from USTs and ASTs and associated piping must be cleaned up to protect the environment and public health. In April of 2016, the MPCA Remediation Programs began utilizing a new data management system and completed this transition in 2018. Please refer to LUAST database as source of current data.

Environmental Records Definitions - STATE (MN)

PBF Petroleum Brownfields Program Sites

VERSION DATE: 04/26/20

This listing of Petroleum Brownfield sites, including those with Development Response Action Plans dated between 2008 and 2012, is provided by the Minnesota Pollution Control Agency (MPCA). The Petroleum Brownfields Program (formerly VPIC) provides the technical assistance and liability assurance needed to facilitate and expedite the development, transfer, investigation and/or cleanup of property that is contaminated with petroleum. Even after cleanup or MPCA file closure most properties will have contamination remaining. State law requires that persons properly manage contaminated soil and water they uncover or disturb - even if they are not the party responsible for the contamination. Property owners, purchasers or developers of property where contaminated soil or water might be encountered may include provisions - called "response actions" - in development plans describing how petroleum contaminated soil and water will be managed if encountered. For some properties, special construction might be needed to prevent the further spreading of the contamination and/or to prevent petroleum vapors from entering buildings or utility access shafts.

PVICP Potential Voluntary Investigation and Cleanup Program Sites

VERSION DATE: 04/22/16

This listing of Potential Voluntary Investigation and Cleanup Program sites is provided by the Minnesota Pollution Control Agency. These potential sites have not yet entered into the VIC Program until an application has been received at the MPCA.

SWF Solid Waste Facilities

VERSION DATE: 03/05/20

This list of solid waste facilities is provided by the Minnesota Pollution Control Agency. Solid waste includes mixed municipal solid waste (garbage), construction and demolition debris, and/or industrial solid waste.

UNPERMDUMPS Unpermitted Dump Sites

VERSION DATE: 08/03/18

Unpermitted dumpsites are landfills that never held a valid permit from the Minnesota Pollution Control Agency (MPCA). Generally, these dumps existed prior to the permitting program established with the creation of the MPCA in 1967. These dumps are not restricted to any type of waste, but were often old farm or municipal disposal sites that accepted household waste. As of November of 2018, state staff ceased to report this older list. Investigation of these site types is now performed and categorized as a site assessment.

VICP Voluntary Investigation and Cleanup Program Sites

VERSION DATE: 03/01/20

The Voluntary Investigation and Cleanup (VIC) Program site listing is provided by the Minnesota Pollution Control Agency. This program encourages timely property transactions by reducing potential health or

Environmental Records Definitions - STATE (MN)

environmental risks from contamination and promoting the redevelopment of these properties.

WIMN What's In My Neighborhood Database

VERSION DATE: 03/09/20

The Minnesota Pollution Control Agency (MPCA)'s What's in My Neighborhood database contains a variety of environmental information. This includes potentially contaminated sites, permits, licenses, registrations, inspections, and closed enforcement activities. It is a searchable inventory of those properties, as well as sites that have already been cleaned up and those currently being investigated or cleaned up. Environmental permits and registrations: This Web application also contains a searchable inventory of businesses that have applied for and received different types of environmental permits and registrations from the MPCA.

REMSITES MPCA Remediation Sites

VERSION DATE: 01/24/20

This list of Remediation Sites is provided by the Minnesota Pollution Control Agency. In April of 2016, the MPCA Remediation Programs began utilizing a new data management system and completed this transition in 2018. The environmental site types included in this database are Brownfield, Integrated Remediation, Leaking Storage Tank, RCRA Remediation, Superfund, Superfund sub-area, and Site Assessment Sites. Please note that select data may be incomplete for sites migrated from the prior data management system.

SF Superfund Site Information Listing

VERSION DATE: 03/02/20

The Minnesota Pollution Control Agency's Superfund Program identifies, investigates and determines appropriate cleanup plans for abandoned or uncontrolled hazardous waste sites where a release or potential release of a hazardous substance poses a risk to human health or the environment. Superfund does not deal with Resource Conservation and Recovery Act (RCRA) sites or petroleum storage tank releases.

Environmental Records Definitions - TRIBAL

USTR05 Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/01/19

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 5. Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

LUSTR05 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/01/19

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 5. Region 5 includes the following states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

INDIANRES Indian Reservations

VERSION DATE: 09/27/17

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

Appendix E

Fire Insurance Map No Coverage Letter

Fire Insurance Maps No Coverage Statement

Site Location

Residential Development
County 1 and County 24
Redwood Falls, MN

Requested by

Braun Intertec Corporation
11001 Hampshire Ave S
Bloomington, MN

HIG Project #

2037924

Client Project #

B2004585

Date Created

05/27/2020



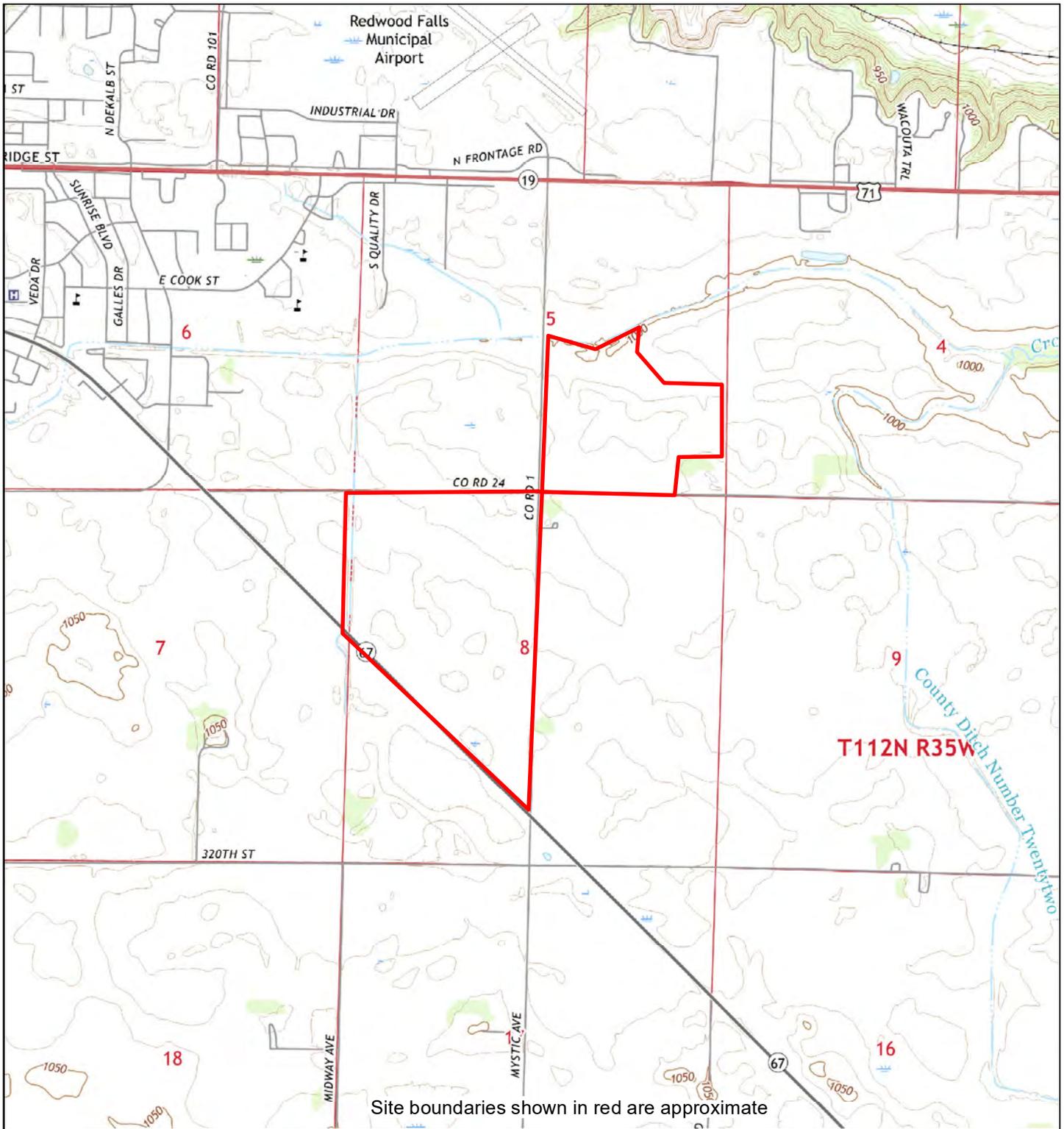
Historical
Information
Gatherers

The HIG Historical Map Collection and the United States Library of Congress Map Collection were searched for fire insurance maps (FIM), real estate atlases and similar maps for the site location and adjoining properties. No FIMs or similar maps were identified for the site location and/or adjacent properties.

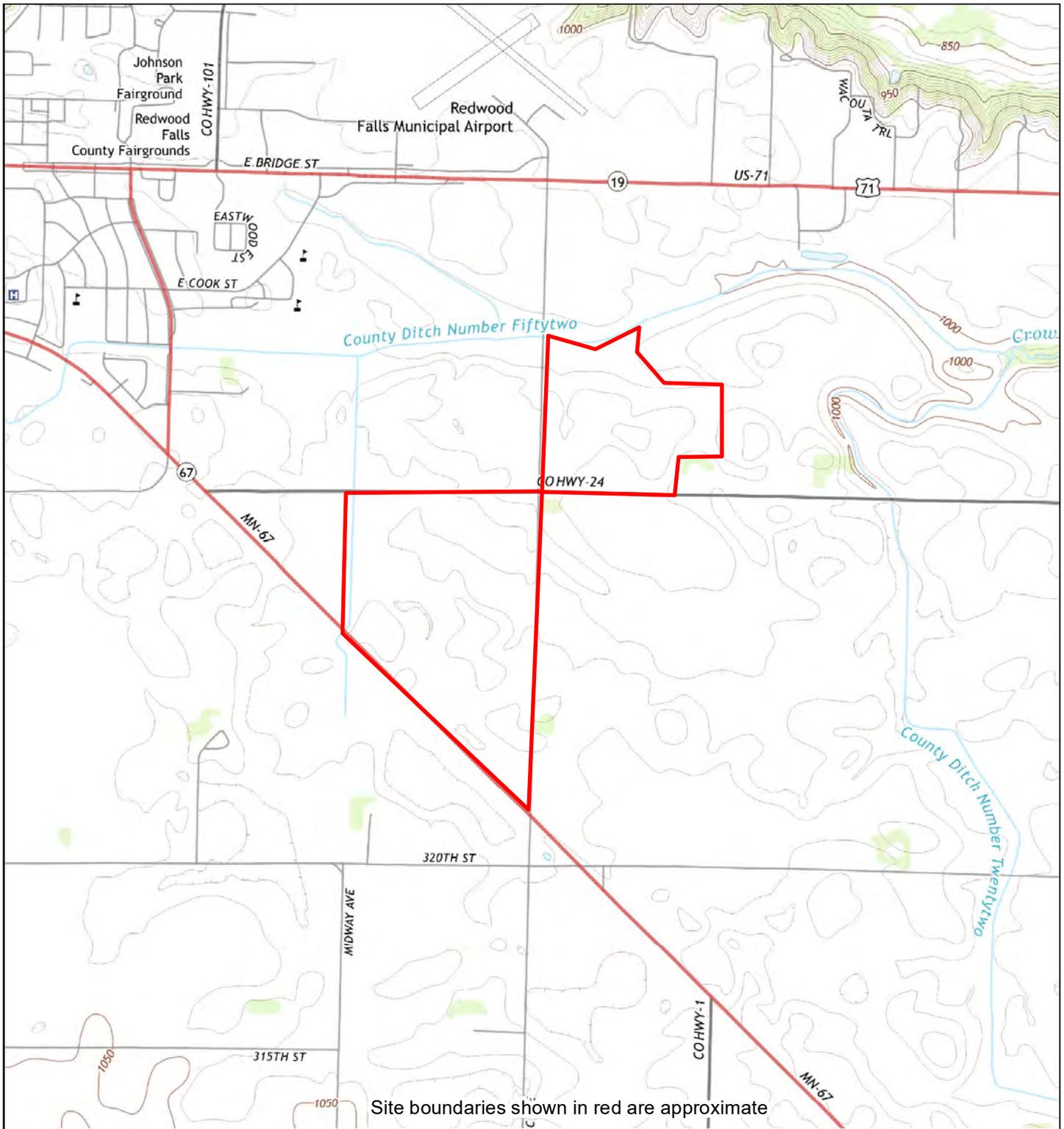
FIM+ Maps

The HIG Historical Map Collection and the United States Library of Congress Map Collection were searched for fire insurance maps (FIMs), real estate atlases and similar maps for the site location and adjoining properties. No FIMs or similar maps were identified for the site location and/or adjoining properties.

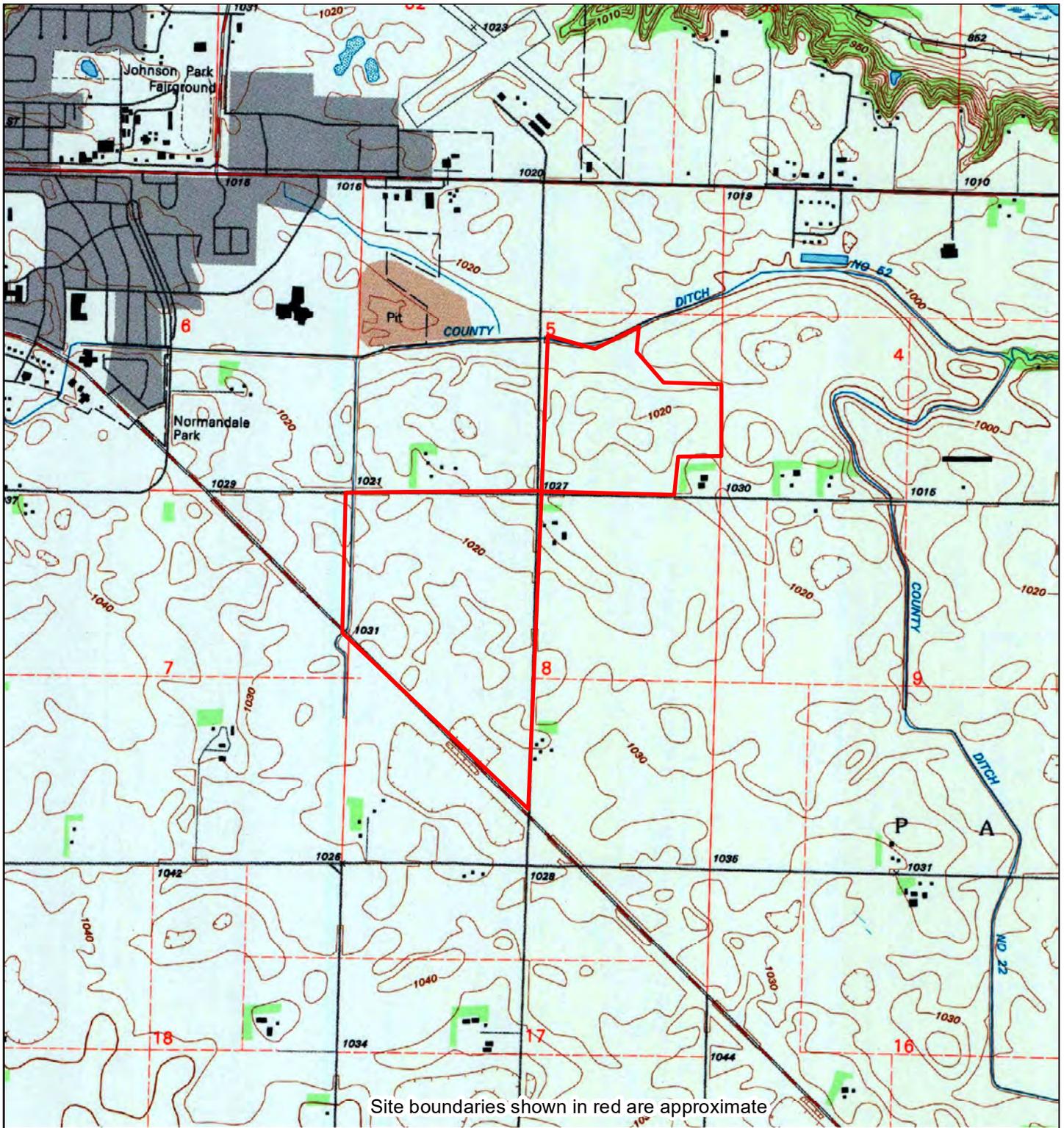
Appendix F
Topographic Maps



2016	0	Distance in Miles	1	Site information: Residential Development County 1 and County 24 Redwood Falls, MN	
	1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N				
Unified maps show subdued modern topo features where corresponding maps of the same year were not published.			Braun Intertec Corporation project #B2004585 HIG #202037924 completed: 05/27/2020 13:22		
Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates
All	Redwood Falls, MN	USGS	7½' x 7½'	2016	Photo Year Inspected Revised
					-- -- --

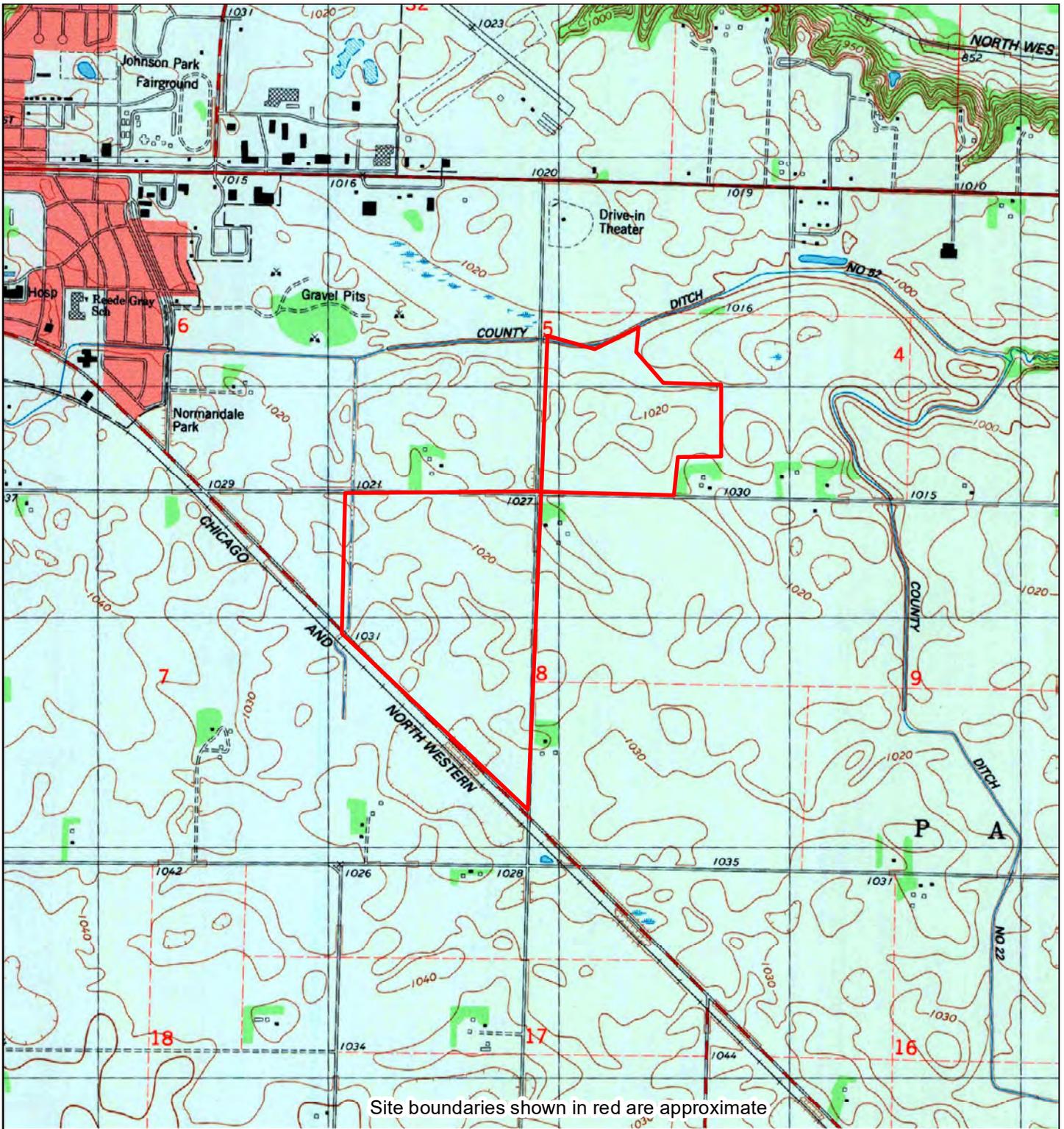


<h1>2013</h1>	<p>0 Distance in Miles 1</p> <p>1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N</p>	<p>Site information: Residential Development County 1 and County 24 Redwood Falls, MN</p>																
<p>Unified maps show subdued modern topo features where corresponding maps of the same year were not published.</p>		<p>Braun Intertec Corporation project #B2004585 HIG #202037924 completed: 05/27/2020 13:22</p>																
<table border="1"> <thead> <tr> <th>Zone</th> <th>Topographic Map Name</th> <th>Publisher</th> <th>Map Size</th> <th>Base Map</th> <th>Aerial Photo Topo Updates</th> </tr> </thead> <tbody> <tr> <td>All</td> <td>Redwood Falls, MN</td> <td>USGS</td> <td>7½' x 7½'</td> <td>2013</td> <td> <table border="1"> <thead> <tr> <th>Photo Year</th> <th>Inspected</th> <th>Revised</th> </tr> </thead> <tbody> <tr> <td>--</td> <td>--</td> <td>--</td> </tr> </tbody> </table> </td> </tr> </tbody> </table>	Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates	All	Redwood Falls, MN	USGS	7½' x 7½'	2013	<table border="1"> <thead> <tr> <th>Photo Year</th> <th>Inspected</th> <th>Revised</th> </tr> </thead> <tbody> <tr> <td>--</td> <td>--</td> <td>--</td> </tr> </tbody> </table>	Photo Year	Inspected	Revised	--	--	--
Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates													
All	Redwood Falls, MN	USGS	7½' x 7½'	2013	<table border="1"> <thead> <tr> <th>Photo Year</th> <th>Inspected</th> <th>Revised</th> </tr> </thead> <tbody> <tr> <td>--</td> <td>--</td> <td>--</td> </tr> </tbody> </table>	Photo Year	Inspected	Revised	--	--	--							
Photo Year	Inspected	Revised																
--	--	--																



Site boundaries shown in red are approximate

1992	0 Distance in Miles 1 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N	Site information: Residential Development County 1 and County 24 Redwood Falls, MN					
Unified maps show subdued modern topo features where corresponding maps of the same year were not published.		Braun Intertec Corporation project #B2004585 HIG #202037924 completed: 05/27/2020 13:22					
Zone	Topographic Map Name	Publisher	Map Size	Base Map	Aerial Photo Topo Updates		
All	Redwood Falls, MN	USGS	7½' x 7½'	1992	Photo Year	Inspected	Revised
					1992	--	--



1982

0 Distance in Miles 1
 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N

Site information:
 Residential Development
 County 1 and County 24
 Redwood Falls, MN



Unified maps show subdued modern topo features where corresponding maps of the same year were not published.

Braun Intertec Corporation project #B2004585
 HIG #202037924 completed: 05/27/2020 13:22

		Aerial Photo Topo Updates					
Zone	Topographic Map Name	Publisher	Map Size	Base Map	Photo Year	Inspected	Revised
All	Redwood Falls, MN	USGS	7½' x 7½'	1982	1978	--	--



1952

0 Distance in Miles 1
 1: 24,000 (1"=2,000') NAD 1983 UTM Zone 15N

Site information:
 Residential Development
 County 1 and County 24
 Redwood Falls, MN



Unified maps show subdued modern topo features where corresponding maps of the same year were not published.

Braun Intertec Corporation project #B2004585
 HIG #202037924 completed: 05/27/2020 13:22

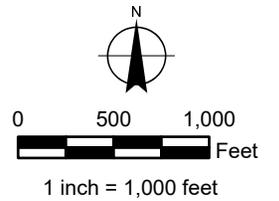
				Aerial Photo Topo Updates			
Zone	Topographic Map Name	Publisher	Map Size	Base Map	Photo Year	Inspected	Revised
All	Redwood Falls, MN	USGS	15' x 15'	1952	1951	--	--

Appendix G
Aerial Photographs



 Approximate Site Boundary

Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)



11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:
B2004585

Drawing No:
B2004585

Drawn By: ZS
Date Drawn: 5/26/2020
Checked By: AB
Last Modified: 5/28/2020

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

**2015
Historic
Aerial**

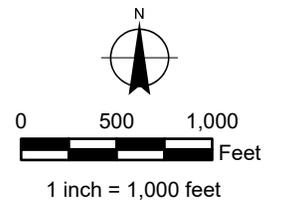
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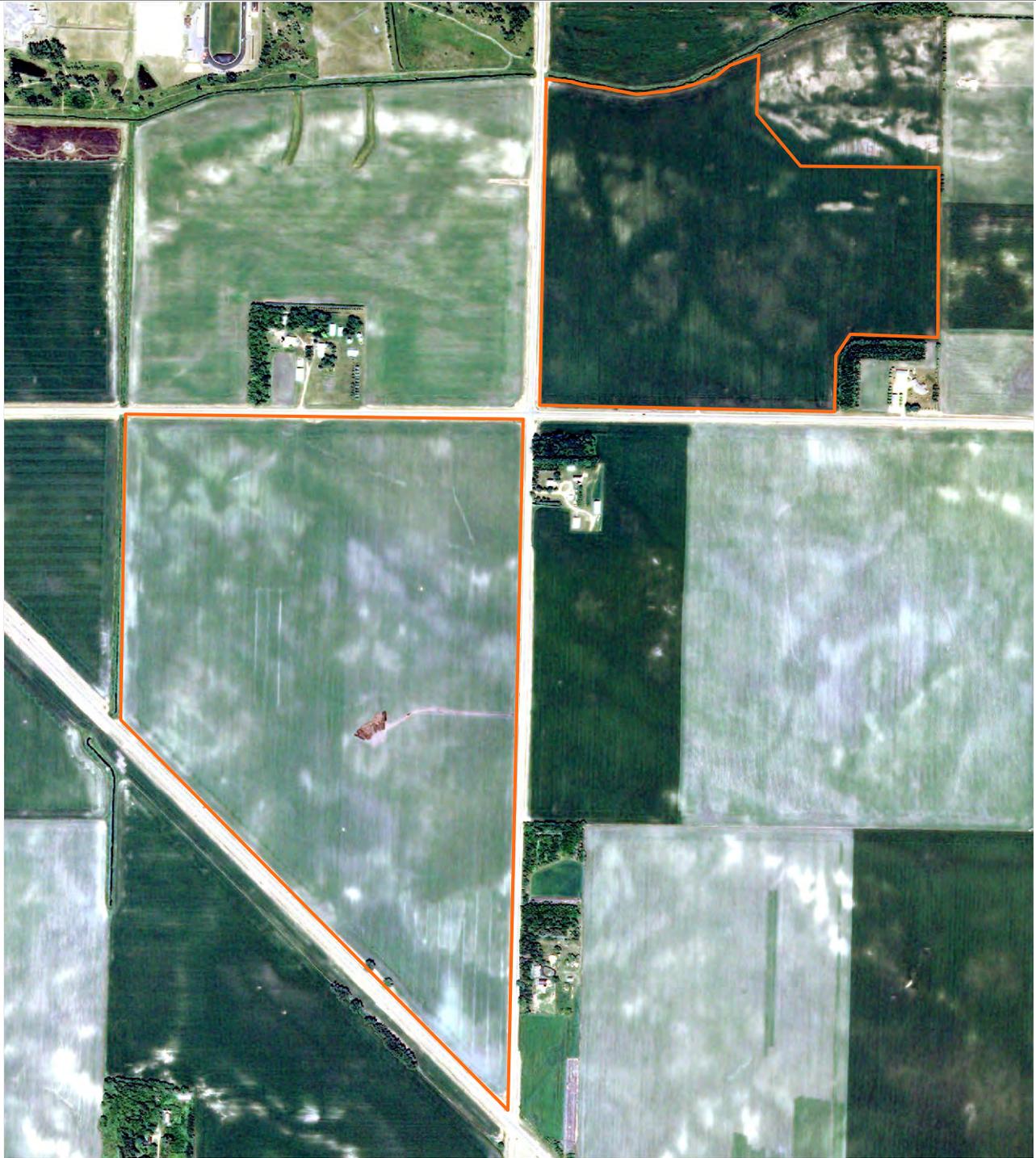
Figure 3



 Approximate Site Boundary

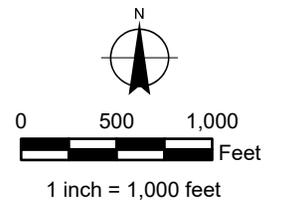
Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)





 Approximate Site Boundary

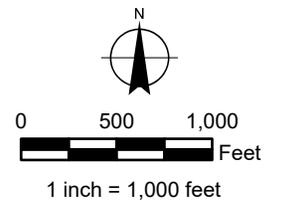
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 Approximate Site Boundary

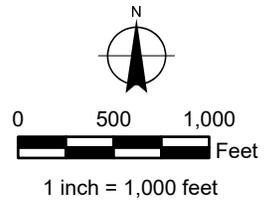
Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)

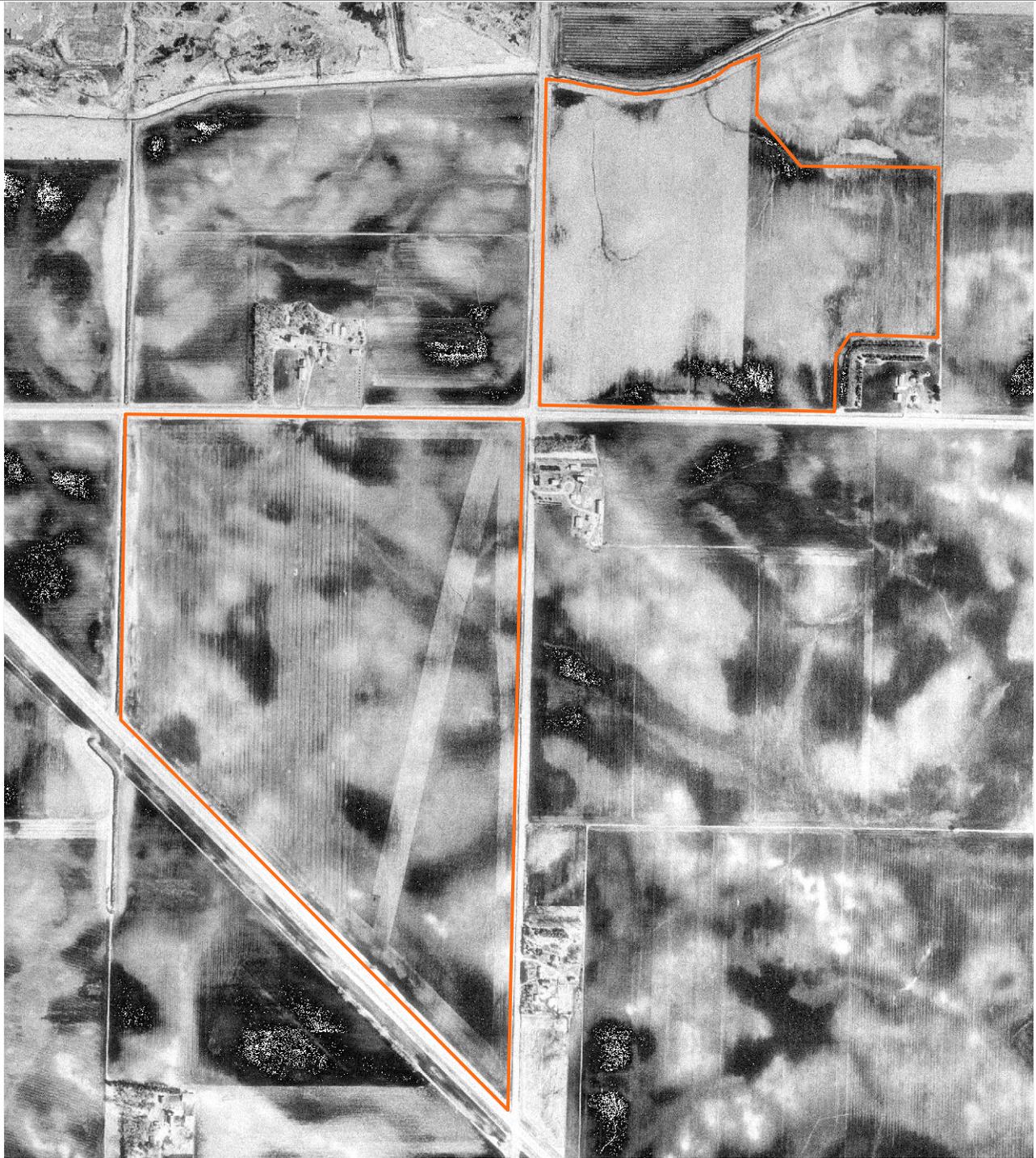




 Approximate Site Boundary

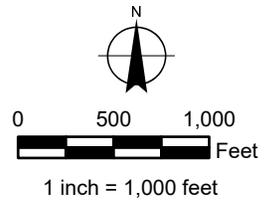
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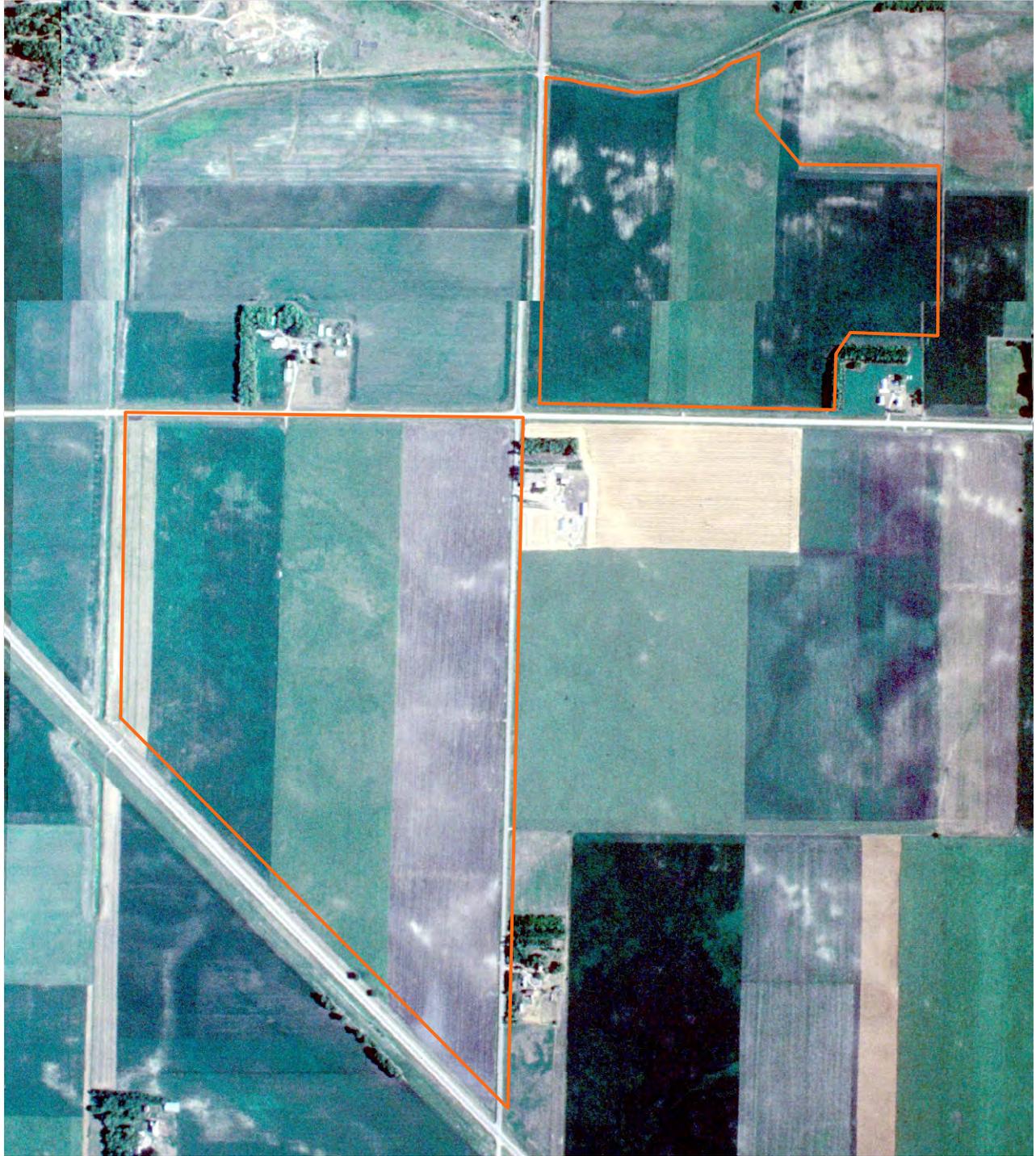




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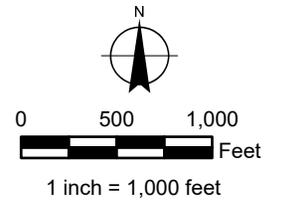
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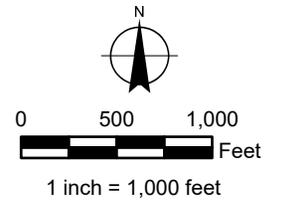
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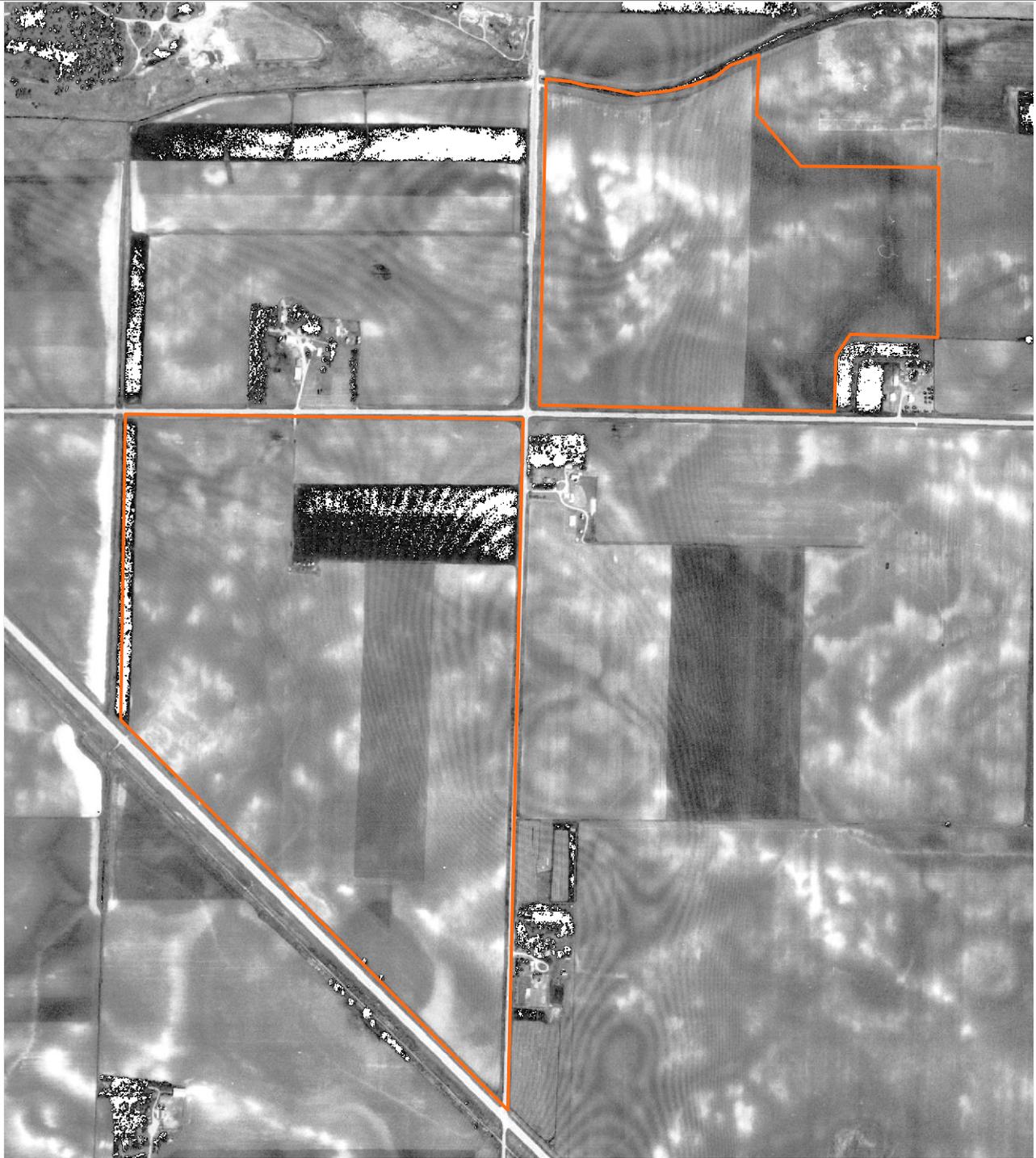




 Approximate Site Boundary

Arial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)





 Approximate Site Boundary

Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)



0 500 1,000
Feet
1 inch = 1,000 feet



11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:
B2004585

Drawing No:
B2004585

Drawn By: ZS
Date Drawn: 5/26/2020
Checked By: AB
Last Modified: 5/28/2020

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

1978
Historic
Aerial

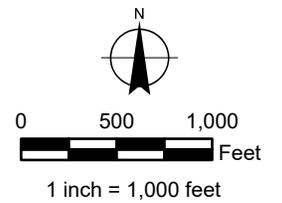
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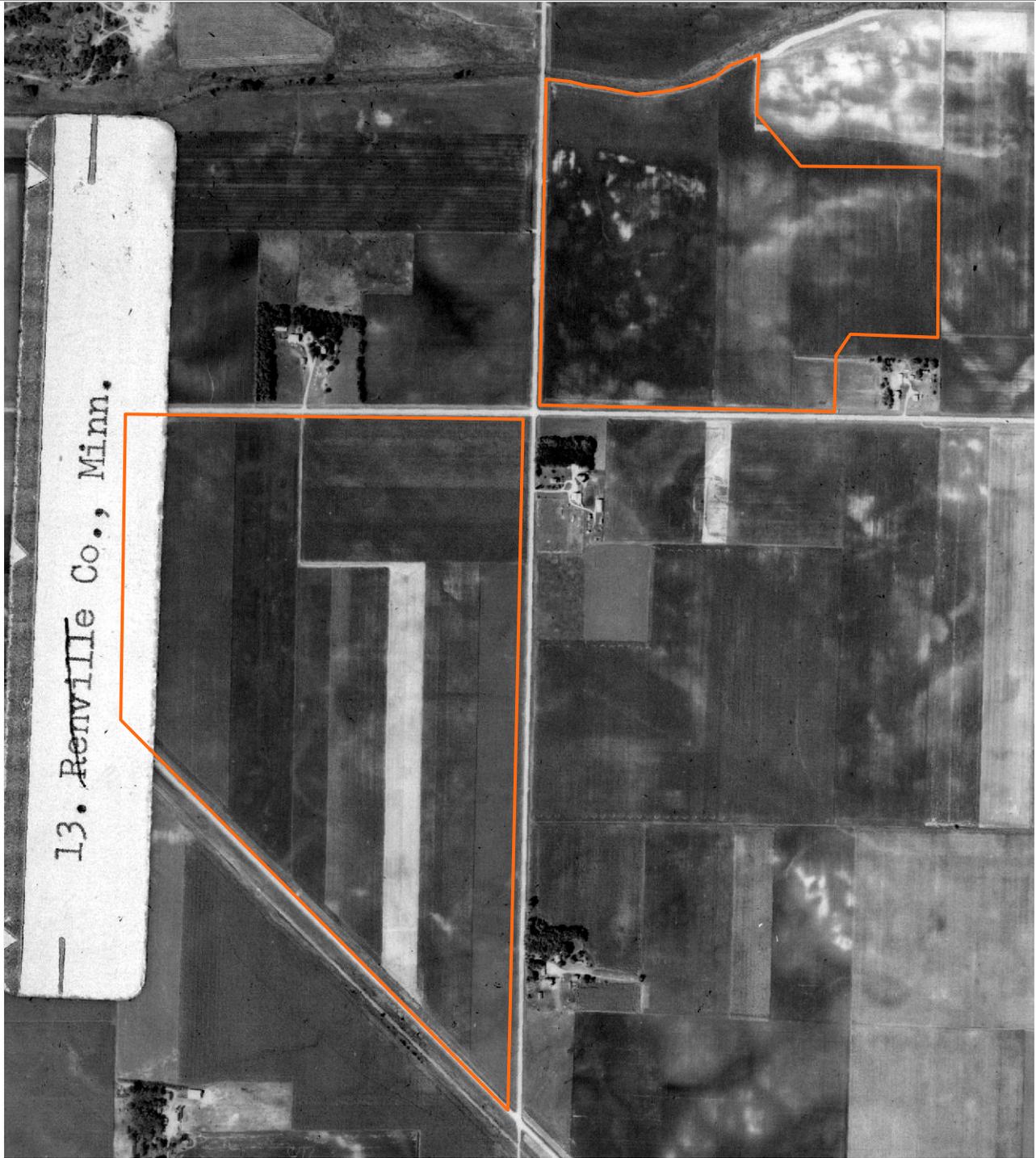
Figure 3



 Approximate Site Boundary

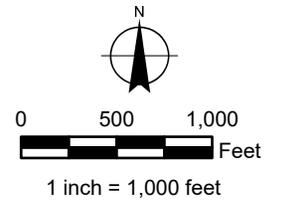
Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)





 Approximate Site Boundary

Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)





 Approximate Site Boundary

Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)



0 500 1,000
Feet

1 inch = 1,000 feet



11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:
B2004585

Drawing No:
B2004585

Drawn By: ZS
Date Drawn: 5/26/2020
Checked By: AB
Last Modified: 5/28/2020

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

**1955
Historic
Aerial**

Sheet:
12 of 13

Figure 3



 Approximate Site Boundary

Aerial Imagery Provided By: Historical Information Gatherers, Inc. (HIG)



0 500 1,000
Feet

1 inch = 1,000 feet



11001 Hampshire Avenue S
Minneapolis, MN 55438
952.995.2000
braunintertec.com

Project No:
B2004585

Drawing No:
B2004585

Drawn By: ZS
Date Drawn: 5/26/2020
Checked By: AB
Last Modified: 5/28/2020

Residential Development

County 1 and County 24

Redwood Falls, Minnesota

**1950
Historic
Aerial**

Sheet:
13 of 13

Figure 3

Appendix H
Site Photographs



Photograph #1	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	BRAUN INTERTEC
Direction:	Northwest from CR 1 and Highway 67	
Subject:	Southwest parcel of Site	



Photograph #2	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	BRAUN INTERTEC
Direction:	Northeast from Highway 67	
Subject:	Southwest parcel of Site	



Photograph #3	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	
Direction:	South from CR 24	
Subject:	Southwest parcel of Site	



Photograph #4	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	
Direction:	Southwest from CR 24 and CR 1	
Subject:	Southwest parcel of Site	



Photograph #5	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	
Direction:	North from CR 24	
Subject:	West portion of northeast parcel of Site	



Photograph #6	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	
Direction:	North from CR 24	
Subject:	East portion of northeast parcel of Site	



Photograph #7	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	BRAUN INTERTEC
Direction:	East from CR 1	
Subject:	South portion of northeast parcel of Site	



Photograph #8	Residential Development, Redwood Falls, MN	B2004585
Date:	May 29, 2020	BRAUN INTERTEC
Direction:	East from CR 1	
Subject:	North portion of northeast parcel of Site	

Appendix I
References

Environmental Protection Agency 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries, Final Rule, Vol. 70, No. 210, Tuesday, November 1, 2005, Rules and Regulations.

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Setterholm, D.R., "Depth to Bedrock and Bedrock Topography," *Geologic Atlas - Redwood County, Minnesota*, County Atlas Series, Atlas C-36, Part A, Plate 5, Scale 1:200,000, University of Minnesota - Minnesota Geological Survey, 2016.

Appendix J
Resumes

EDUCATION

B.S., Geological Engineering,
University of Minnesota

CERTIFICATIONS

Minnesota Department of Health (MDH)
Asbestos Inspector
No. AI3036 and refresher training

MDH Asbestos Management Planner
No. AI3036 and refresher training

MDH Lead Risk Assessor
No. LR188 and refresher training

40-Hour HAZWOPER Certification and annual
refresher training

Niton X-Ray Fluorescence Analyzer
Certification

Mr. Brown has more than 27 years of environmental consulting experience specifically related to environmental assessment work. Kelly's experience has included the completion of numerous Phase I Environmental Site Assessments (ESA), including many large transportation corridor and multi-property assessments; asbestos and lead-based paint surveys; and hazardous materials surveys and abatement projects. His other areas of expertise include laboratory analysis of asbestos and industrial hygiene monitoring for asbestos and other contaminants, and property transfer assessments. Kelly has worked on several large-scale transportation corridor assessment projects and is very familiar with the technical approach and documentation requirements for these projects. He has substantial experience providing environmental assessment services to public agencies including the Minnesota Department of Transportation (MnDOT), Minnesota Pollution Control Agency (MPCA), the Metropolitan Council, Hennepin County, Ramsey County, Dakota County, City of St. Paul, City of Minneapolis, and numerous other metro area cities.

PROJECT EXPERIENCE

- *Multiple Active Transportation Corridors, MnDOT** — Senior environmental professional for many of the projects assigned under MnDOT contract. Under this contract, completed roadway Phase I ESAs, Phase II investigations and/or construction monitoring for projects in various cities across the state, including Ada, Blue Earth, Ely, Forest Lake, Kenyon, Lindstrom, Mankato, Nashwauk, Northfield, Rice, Virginia, Waconia, and Waseca, as well as several large-scale roadway corridor/interchange projects in the Twin Cities metro area. The projects included identifying and assessing potential environmental concerns within the project corridors that could affect the planned roadway improvements along the corridors and potentially delay construction.
- *Central Corridor Light Rail Transit Corridor (CCLRT), Minneapolis to St. Paul, MN** — Senior environmental professional for a project for the Metropolitan Council Metro Transit to perform a Phase I ESA of an approximate 9.8-mile locally preferred alignment of the CCLRT between downtown Minneapolis to downtown St. Paul. The purpose of the Phase I was to identify, to the extent possible, any sources of contamination (based on present or former land use) on properties that could impact construction of the CCLRT. The project corridor included one alternative alignment between Oak Street and 29th Avenue SE in Minneapolis, and two between Cedar and Wacouta in St. Paul.
- *Southwest Light Rail Transit Corridor (SWLRT), Minneapolis to Eden Prairie, MN** — Senior environmental professional for the project team retained by the Metropolitan Council Metro Transit to perform a Phase I ESA of an approximate 16-mile locally preferred alignment of the SWLRT between downtown Minneapolis to Eden Prairie. The purpose of the Phase I ESA was to identify, to the extent possible, any sources of contamination (based on present or former

**While employed by another firm.*

KELLY W. BROWN

Senior Scientist

land use) on properties that could impact construction of the SWLRT.

Conducted the assessment work along the corridor and completed numerous MPCA file reviews for sites of potential concern along the proposed SWLRT route.

- *Lake Wobegon Trail, St. Joseph to St. Cloud, MN** — Senior environmental professional for project team retained by the MPCA to perform a Phase I ESA of an approximate 7.5-mile railroad corridor located between County Road 133 in St. Joseph, Minnesota and the Mississippi River in downtown St. Cloud, Minnesota. The property was being considered for potential development as a railroad corridor and a bicycle/pedestrian transportation corridor (an extension of the Lake Wobegon Trail that currently ends in St. Joseph). Completed the assessment work and reporting.
- *Area Wide Groundwater Studies, Minneapolis and Bloomington, MN** — Senior Environmental Professional on two area-wide groundwater studies completed for Hennepin County and/or the MPCA. The area-wide studies were conducted to gather and consolidate information and data related to the extent and source(s) of known plumes of chlorinated volatile organic compounds (VOC) in groundwater that has been identified on several individual properties located within the study areas. The groundwater VOC plume and related soil-gas contamination issues were increasingly becoming issues for the redevelopment of properties within the study areas. It was foreseen that the area wide study results could be used as a development planning tool for individual study area properties and could be used streamline the amount of site-specific environmental data needed to secure liability assurance letters and regulatory approvals related to property acquisitions and redevelopment.
- *Multiple Asbestos and Lead-Paint Assessments, MN** — Conducted asbestos assessment surveying, sampling and abatement managing following Asbestos Hazardous Emergency Response Act (AHERA), OSHA and Environmental Protection Agency (EPA) guidelines and regulations for several Minnesota School Districts and numerous industrial/commercial entities. Conducted numerous lead paint inspections and risk assessments on several large apartment complexes. Conducted numerous predemolition hazardous materials surveys for residential, commercial, and industrial properties and prepared reports presenting survey and sampling results, protocols and recommendations for abatement measures and asbestos management. Project examples include Madison Lofts, Minneapolis, Minnesota; Ames Lake Redevelopment Project, St. Paul, Minnesota; Airport Noise Acquisition/Relocation Project, Richfield, Minnesota; Robbinsdale School Demolition, Robbinsdale, Minnesota; Carleton Place Lofts, St. Paul, Minnesota; Con-Agra, Minneapolis, Minnesota; Delmar Grain Elevators, Minneapolis, Minnesota; Glen Lake Development, Minnetonka, Minnesota; and City of St. Paul Properties, St. Paul, Minnesota.

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EDUCATION

B.A., Chemistry,
University of Minnesota

CERTIFICATIONS

OSHA 40-Hour Hazardous Waste Operations
Certification (29 CFR 1910.120)

National Radon Proficiency Program (NRPP)
Radon Testing Certification

Mr. Stephan is an Environmental Professional with more than 30 years of environmental consulting experience on various projects relating to all aspects of Phase I Environmental Site Assessments (ESAs). James is responsible for the completion, management and review of Phase I ESAs for a variety of clients across all market sector areas. His experience includes knowledge of complex site issues including those related to building specific hazards such as asbestos, lead based paint, and radon and those related to potential sources of soil, groundwater, and/or soil vapor contamination. James also has experience related to the assessment of National Environmental Policy Act (NEPA) items such as wetlands, floodplains, coastal resources, and critical habitats. This knowledge and experience crosses all property types with significant experience with services related to due diligence for acquisition and redevelopment. James has worked on all types of properties, completed and/or managed ESAs across the continental United States, and has experience with a variety of client specific requirements and various state regulatory requirements.

PROJECT EXPERIENCE

- *Multi-State Project Experience* — James has managed and/or completed several multi-site Phase I ESA projects. Specific projects have included 25 multi-family apartment buildings located primarily in the southeastern United States; 18 multi-family apartment buildings located in California; 23 bank branches located in the Western United States; 45 motels in 20 different states; 30 fast food restaurants in six Midwestern states; 30 sites for a single-family home developer in the southeast; and 48 apartments located in 10 states. These multi-state projects were completed within 21 to 45 days of authorization and many required asbestos testing or other related services.
- *Commercial Project Experience* — James has managed and/or completed numerous Phase I and Phase I ESAs of commercial properties including industrial, office, warehouse, manufacturing, and retail facilities. The projects were completed in strict accordance with the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Some of these projects required asbestos testing, underground storage tank evaluation, vapor assessment, or property condition reports.
- *Affordable Multifamily Experience* — James has knowledge of the specific requirements and nuances related to the acquisition and development of affordable multifamily properties. This experience covers numerous states with extensive experience in Minnesota, Texas, Florida, Georgia, and California. This expertise includes knowledge of the requirements related to various funding entities including the U. S. Department of Housing and Urban Development (HUD); Freddie Mac; Fannie Mae; and various Low-Income Housing Tax Credit (LITEC) and private investor requirements.

JAMES E. STEPHAN
Group Manager, Senior Scientist

- *Project Coordination* — James coordinated the asbestos abatement activities related to the Metropolitan Airports Commission (MAC) “Part 150 Sound Insulation Program” over the 1997-2012 time period. Under this program, more than 7,000 homes in the vicinity of the Minneapolis/St. Paul International Airport were renovated to reduce the effects of aircraft noise. Eligible homes received new windows and doors, wall and attic insulation, central air, venting or ductwork modifications, roof vents, and attic baffling. Role included evaluating contractor bid submittals for the MAC, scheduling and coordinating the abatement work, documenting the abatement activities and communication with the respective home owners. Approximately one-third of the homes in the Sound Insulation Program required asbestos abatement. The abatement had to be completed within stringent construction schedules.
- *RTC/FDIC* — James has managed and/or completed more than 125 Phase I ESAs for various RTC and FDIC offices. These included work with SAMDA contractors and banks in receivership. The projects were concentrated primarily in California, Arizona, and Washington. Projects were also completed in Florida, Illinois, Kansas, Michigan, Minnesota, Missouri, and Ohio.
- *Central Corridor Light Rail Transit Corridor (CCLRT), Minneapolis to St. Paul, MN* — James managed a project awarded by the Metropolitan Council Metro Transit to perform a Phase I ESA of an approximate 9.8-mile locally preferred alignment of the CCLRT between downtown Minneapolis to downtown St. Paul. The purpose of the Phase I was to identify any sources of contamination (based on present or former land use) on properties that could impact construction of the CCLRT. The project corridor included one alternative alignment between Oak Street and 29th Avenue SE in Minneapolis, and two between Cedar and Wacouta in St. Paul. James was the project manager for the project. His specific responsibilities included client interaction and correspondence, managing the project schedule and budget, coordinating site access, and report review and quality control.