Olmsted County Planning Department

Oronoco Township Board	November 1, 2021

Prepared by: Olmsted County Planning Department Staff

Request: Oronoco Township Metes and Bounds #OR2021-003MB by Mark Kuehn. The request is to create a non-farm parcel.

Location: The property is located in the SE ¼ of the NE ¼ in Section 21. It lies north of County Highway 112.

Zoning: A-2, Agricultural Protection District

ACTION ITEMS

Request is to allow a non-farm parcel in the SE ¼ of the NE ¼ of Section 21.

BACKGROUND INFORMATION

Background

The property is located in the A-2 District. Below are the standards according to Section 5.02 of the Oronoco Township Zoning Ordinance. The answers in bold are how the property complies with the required standards.

C. Standards for Non-Farm Lots or Dwellings: Non-farm lots or dwellings shall be permitted only when they comply with all of the following standards:
   1. No more than one non-farm lot per quarter-quarter section. Should a quarter-quarter section contain a buildable non-farm lot, no additional dwelling shall be permitted. **The proposed lot is the only non-farm property in the SE ¼ of the NE ¼.**
   2. Any non-farm lot shall contain at least one (1) acre of non-prime agricultural soils with a crop equivalent rating of 55 or less. When a dwelling, which is not a mobile home, existed in its present location prior to April 16, 1983, this standard shall not apply. **The applicant has provided sufficient information that**

proved that while the soils map states the CER of the property is greater than 55, the lot does contain an acre of non-prime soils.

3. No non-farm dwelling shall be permitted in areas identified as wetlands or flood plain. **There is no wetlands or floodplain located on the proposed non-farm property.**
4. No non-farm dwelling shall be located within one-fourth (1/4) mile of an animal feedlot or manure storage facility not located on the same non-farm lot. **There are no feedlots located within ¼ mile of the proposed non-farm parcel.**

The applicant requests the following:
The applicant is requesting a metes and bounds subdivision to allow a 3 acre non-farm property with a 77 acre remnant parcel.

ANALYSIS AND FINDINGS

Township Board Action
The Olmsted County Subdivision Ordinance gives the Townboard the opportunity to review any Metes and Bounds subdivision in which a lot less than forty (40) acres is created. The Townboard has thirty-five (35) days from the receipt of this letter to comment on the proposed subdivision. Enclosed with this report to the Townboard Clerk is a "Townboard Action Form" on which you may record your response.

Referral Comments
County Public Works commented that a driveway access permit is required for the driveway. This must be obtained prior to final metes and bounds approval.

Staff Recommendation
The proposed metes and bounds is in compliance with the requirements of the Olmsted County and Oronoco Township zoning ordinance requirements. Planning staff recommend the approval of the creation of the 3 acre non-farm parcel according to the survey included in the staff report.

ATTACHMENTS

1. Site Location Map
2. Zoning Map
3. Soils CER Map
4. Applicant Submittals
5. Referral Comments

COUNTY OF OLMSTED, MINNESOTA

LETTER OF TOWNBOARD ACTION

DATE: _____

TO: County of Olmsted
Rochester – Olmsted Planning Department
2122 Campus Dr. SE, Suite 100
Rochester, Minnesota 55904

RE: Report of Action by the Townboard of _____ Township on the Application by _____(Applicant), Located in the _____Quarter of Section _____.

TYPE OF APPLICATON: _____

The Townboard of _____Township met on _____(date) and considered the application of _____(applicant) on the above referred property.

The Townboard has reviewed this application and makes the following comments:

_____

_____

_____

_____

_____

Sincerely,

_____

Clerk of _____Township (Signature Required)

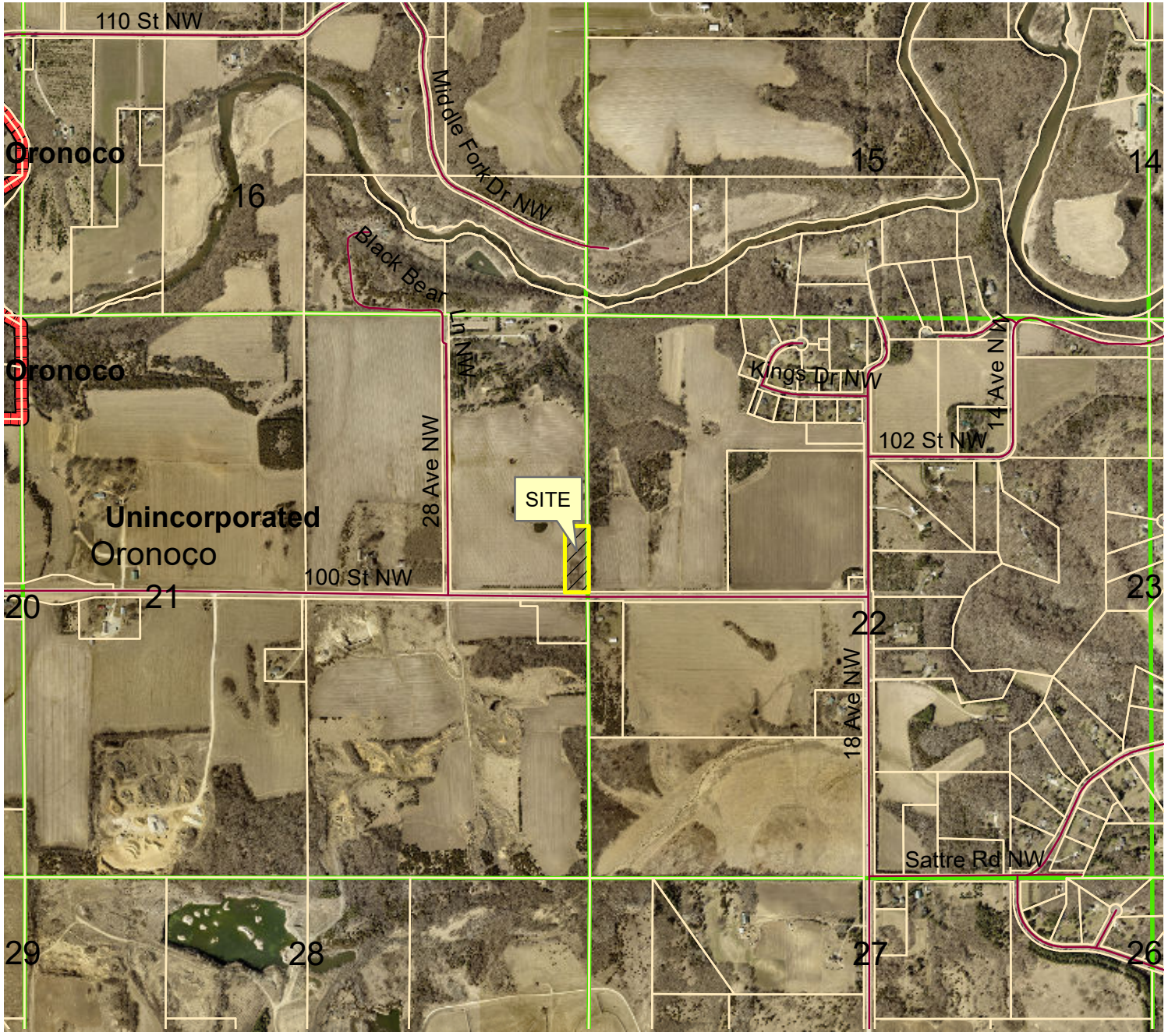
Townboard Members (Signature Required)

_____

_____

_____

DISTRIBUTION:
Planning Department: (white copy)
Townboard (canary copy)
Applicant (pink copy)



N

OR2021-003MB
Site Location Map

Legend

- Road Centerlines
- Parcels
- Sections

1 inch = 1,393 feet

Lidar Datum: D_NAD_1983_HARN_Adj_MN_Olmsted
Aerial Flight Date April 2019
Prepared by the Olmsted County Planning Department
Date October 2021

OR2021-003MB
Zoning Map

Legend

- Road Centerlines
- Parcels

County Zoning

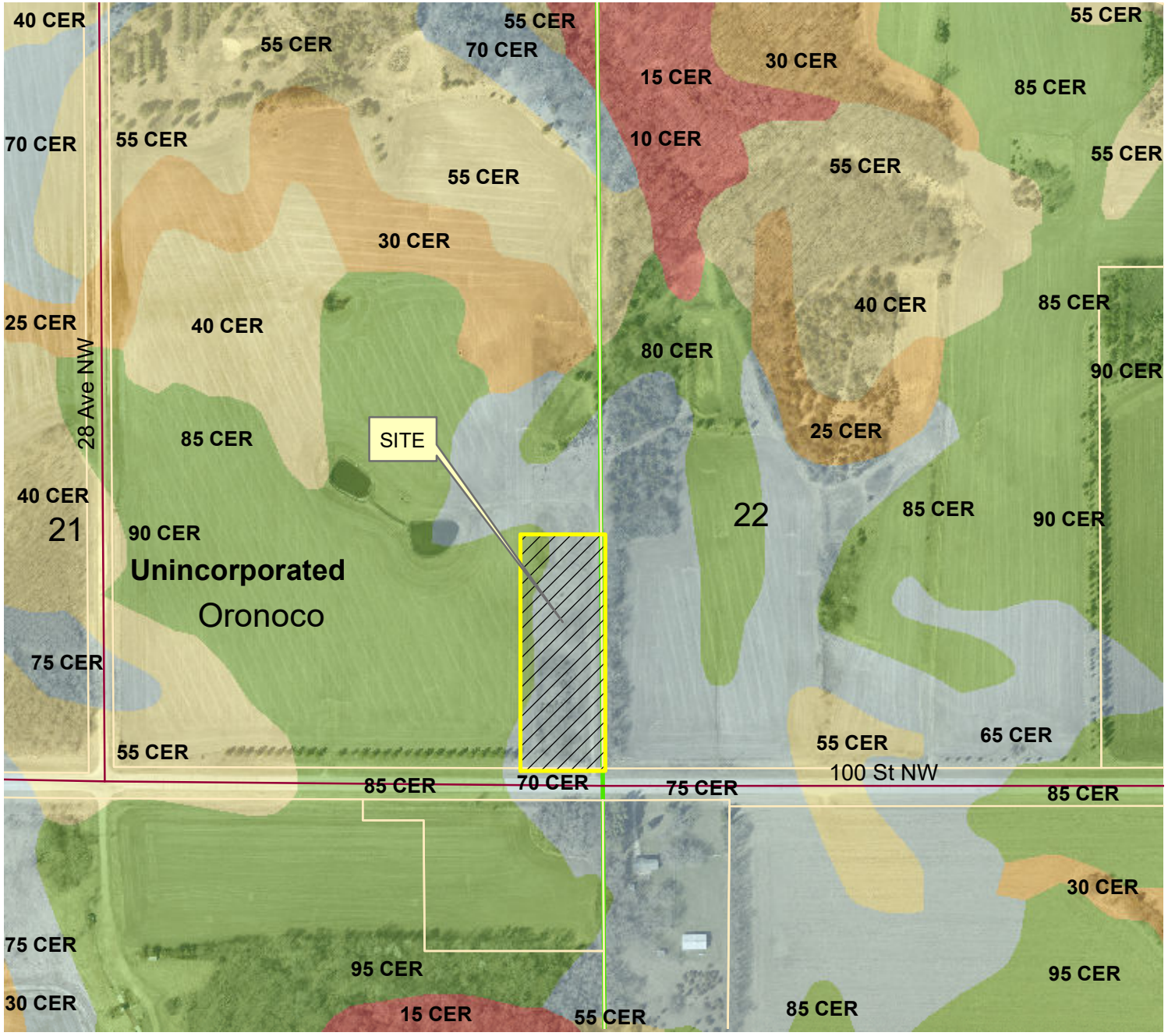
ZONING

- A/RC AER
- A/RC LILI
- A1
- A2
- A3
- A4
- ARC
- AgRC
- AgRM
- HC
- I
- I2
- MI
- R1
- R2
- RA
- RC
- RSD
- SD
- Sections

1 inch = 392 feet

Lidar Datum: D_NAD_1983_HARN_Adj_MN_Olmsted
Aerial Flight Date April 2019

Prepared by the Olmsted County Planning Department
Date October 2021



OR2021-003MB
Soils CER Map

Legend

- Road Centerlines
- Parcels

CER

CER

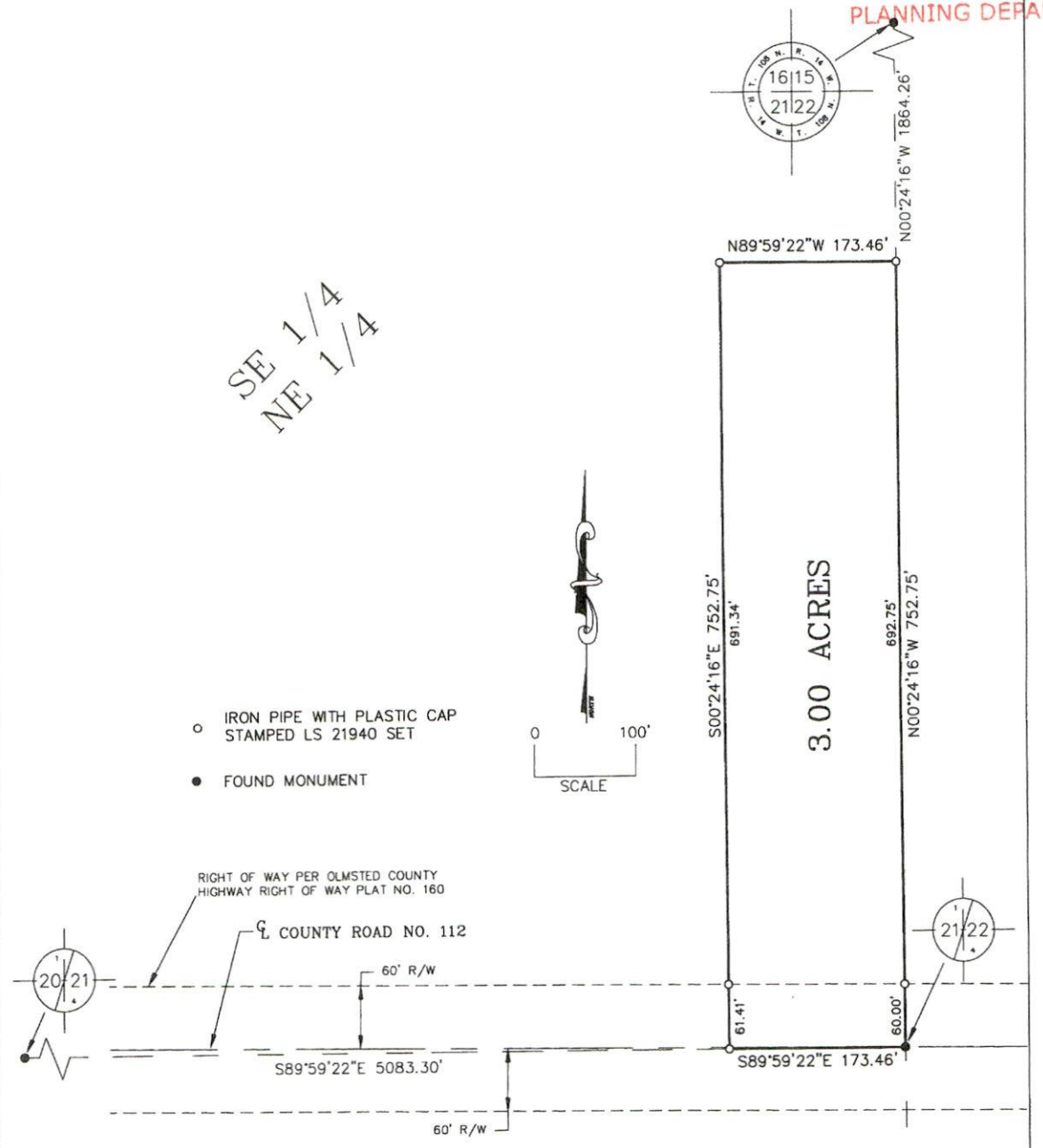
- 0 - 19
- 20 - 39
- 40 - 59
- 60 - 79
- 80 - 100
- Sections

1 inch = 392 feet

Lidar Datum: D_NAD_1983_HARN_Adj_MN_Olmsted
Aerial Flight Date April 2019
Prepared by the Olmsted County Planning Department
Date October 2021

CERTIFICATE OF SURVEY

SECTION 21
T. 108 N., R. 14 W.



LAND DESCRIPTION:

That part of the Southeast Quarter of the Northeast Quarter of Section 21, Township 108 North, Range 14 West, Olmsted County, Minnesota, described as follows:

Beginning at the southeast corner of said Southeast Quarter of the Northeast Quarter; thence North 00°24'16" West, along the east line of said Southeast Quarter of the Northeast Quarter, 752.75 feet; thence North 89°59'22" West, parallel with the south line of said Southeast Quarter of the Northeast Quarter, 173.46 feet; thence South 00°24'16" East, parallel with said east line of the Southeast Quarter of the Northeast Quarter, 752.75 feet to said south line of the Southeast Quarter of the Northeast Quarter; thence South 89°59'22" East, along said south line, 173.46 feet to the point of beginning.

The above described parcel contains 3.00 acres and is subject to any easements, covenants, and restrictions of record.

I HEREBY CERTIFY THAT THIS SURVEY, PLAN, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MINNESOTA

Geoffrey G. Griffin

DATE 6/28/2019 REG. NO. 21940

G-Cubed
14070 Hwy 52 S.E.
Chatfield, MN 55923
ENGINEERING
SURVEYING
PLANNING
Ph. 507-867-1666
Fax 507-867-1665
www.gcubed.biz

DATE OF SURVEY: 6/19/2019
Prepared For:
Mark Kuehn
10426 28th Ave. NW
Oronoco, MN 55960
SHEET 1 OF 1 | FILE NO:19-143

CERTIFICATE OF SURVEY

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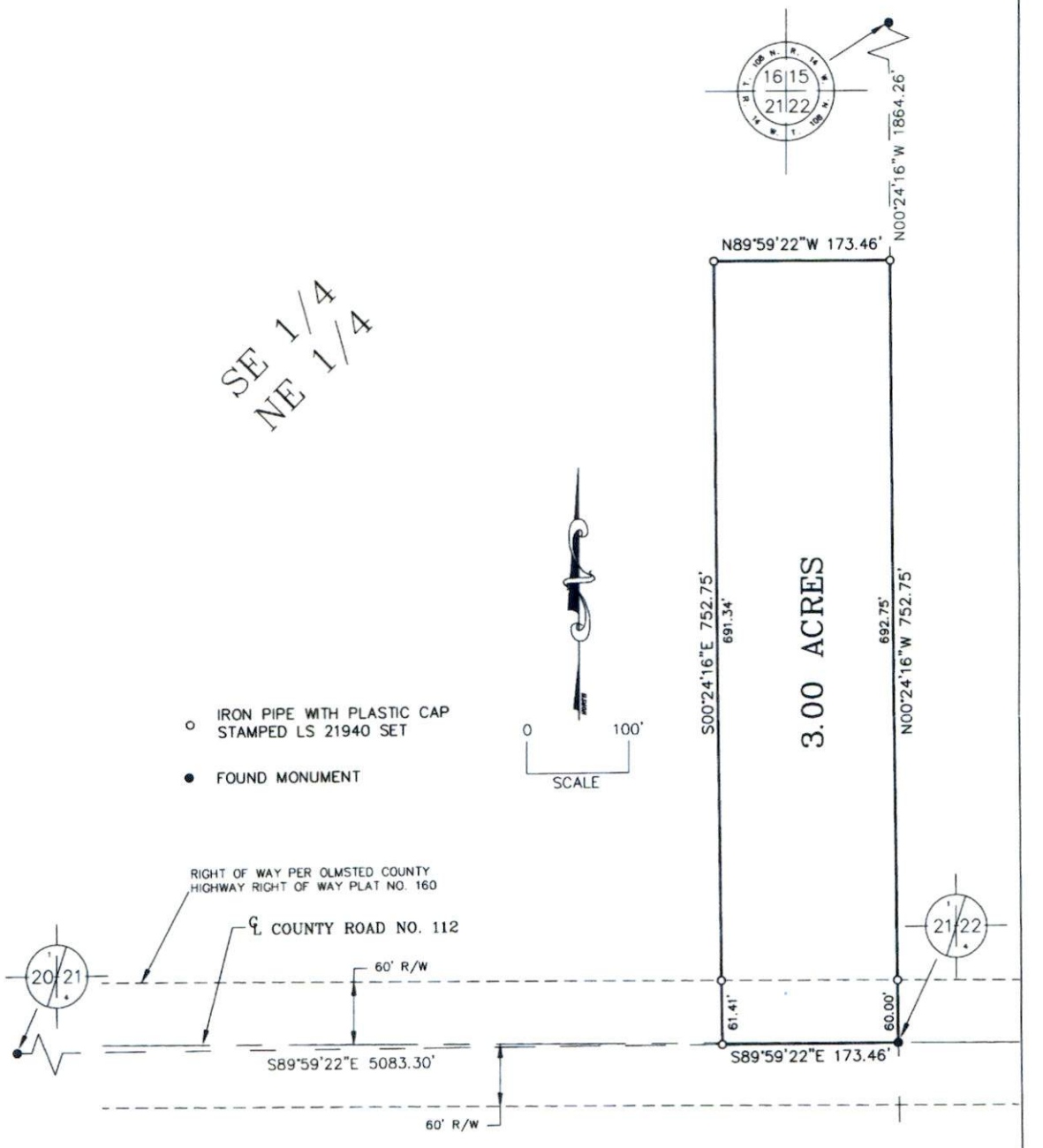
T. 108 N., R. 14 W.



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G-Cubed

ENGINEERING
SURVEYING
PLANNING

December 14, 2020

Olmsted County Planning Department
And
Oronoco Township

RE: Soil Map Re-evaluation – Mark Kuehn Property

At the request of Mr. Mark Kuehn, soil survey mapping units have been re-evaluated within and adjacent to a 3.0 acre parcel owned by Mr. Kuehn in the SE1/4 of NE1/4 of Section 21, 108-14 (see Attachment 1 – Certificate of Survey). The intent of this field verification of the soil mapping units is to confirm the accuracy and locations of each Crop Equivalency Rating (CER) polygon with the 3 acre parcel.

Individual soil mapping units identified by the NRCS Web Soil Survey have been assigned unique CER values by Olmsted County. To insure the accuracy of the CER values and polygon locations, soil borings were dug within the Kuehn property with a 2 inch core sampler to a depth of 80 centimeters or refusal to extract undisturbed samples of soil profiles. The range of characteristics of each soil profile description were recorded (see Attachment B – Soil Boring Profiles) and correlated by a MN-licensed professional soil scientist to specific soil mapping units as defined by the NRCS Web soil Survey. Slope and hillslope positions were also confirmed at each soil profile boring location to further identify the site specific soil mapping unit.

The Web Soil Survey has identified three soil mapping units within the Kuehn property:

- Rockton loam, 0-1 percent slopes (299A)
- Timula silt loam, 6-12 percent slopes, moderately eroded (322C2)
- Waukee loam, 2-5 percent slopes (483B)

The polygons of each of these mapping units are shown in Attachment C- Web Soil Survey – Soil Map Layer. The Timula soil mapping unit comprises over 90% of the surface area of the Kuehn property. Soil mapping units of this series are defined as having developed in deep, coarse silt to depths of greater than 80 centimeters. Slopes range from 6 to 12 percent within this property. The minor mapping unit of Rockton is defined as having a 50 to 100 centimeters of erosional sediment over limestone bedrock. The minor unit of Waukee is defined as having 50 to 100 centimeters of erosional sediment over sandy outwash. Official series descriptions defining the range of characteristics of each of these mapping units are shown in Attachment D – Official Series Descriptions.

14070 Highway 52 Southeast, Chatfield, Minnesota 55923
Phone 507-867-1666 ♦ Fax 507-867-1665 ♦ www.ggg.to

Recording of soil borings and evaluation of site topography at the Kuehn property was conducted on December 7, 2020. Soil boring descriptions, each identified with the correlated soil mapping unit, are shown in Attachment B – Soil Boring Descriptions. These soil borings have identified soil mapping units with thin erosional sediment horizons over limestone bedrock throughout this property. Rockton, 299C and Channahon, 472B and 472C comprise over 90% of the surface area of this property. Re-evaluation of the slopes within this property utilizing the Lidar layer indicates nearly one-half of the property exceeds 12 percent slopes (see Attachment A – Certificate of Survey). The dominant soil mapping unit within this steep area is the Channahon, 472C. Most of the remainder of the property ranges from 6 to 12 percent slopes and is comprised of the mapping unit Rockton, 299C and Channahon 472C. Soils with deep silts were not encountered within this property.

Actual soil boring data combined with topographic information as shown on the Certificate of Survey layer have identified highly contrasting mapping units within the Kuehn property as compared to the Web Soil Survey. These differences change CER values within the property. Rockton and Channahon mapping units with C and D slope phases comprise most of this property. The CER values associated with these mapping units range from 55 to a low of 30. The boundary of this combined range in CER values is shown on the Certificate of Survey (see Attachment A).

Steve Lawler
G-Cubed Engineering
MN PSS License #30342

Enclosures:

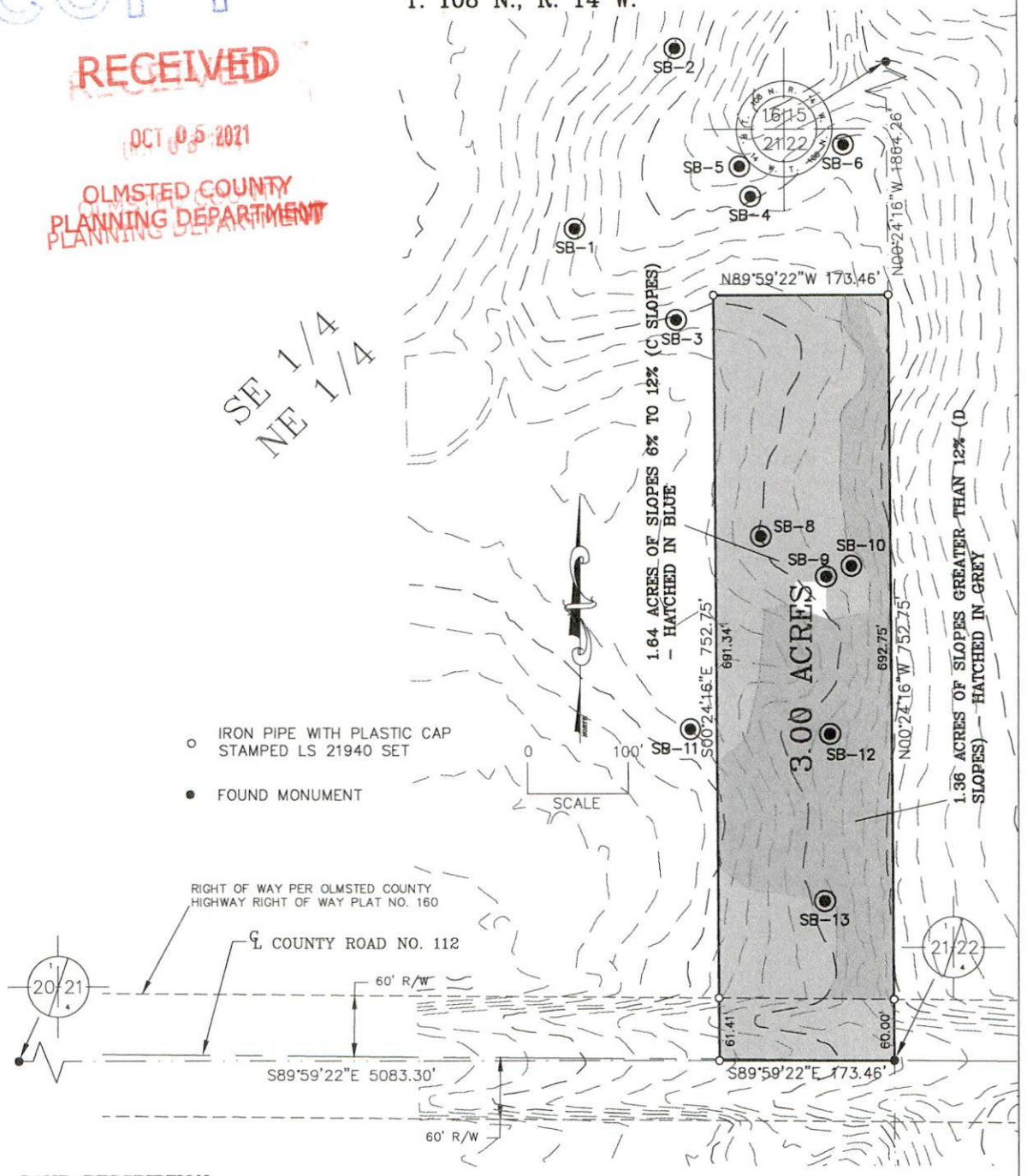
Attachment A - Certificate of Survey
Attachment B - Soil Boring Profiles
Attachment C - Web Soil Survey – Soil Map Layer
Attachment D - Official Series Descriptions

Attachment A

Certificate of Survey

CERTIFICATE OF SURVEY

SECTION 21
T. 108 N., R. 14 W.



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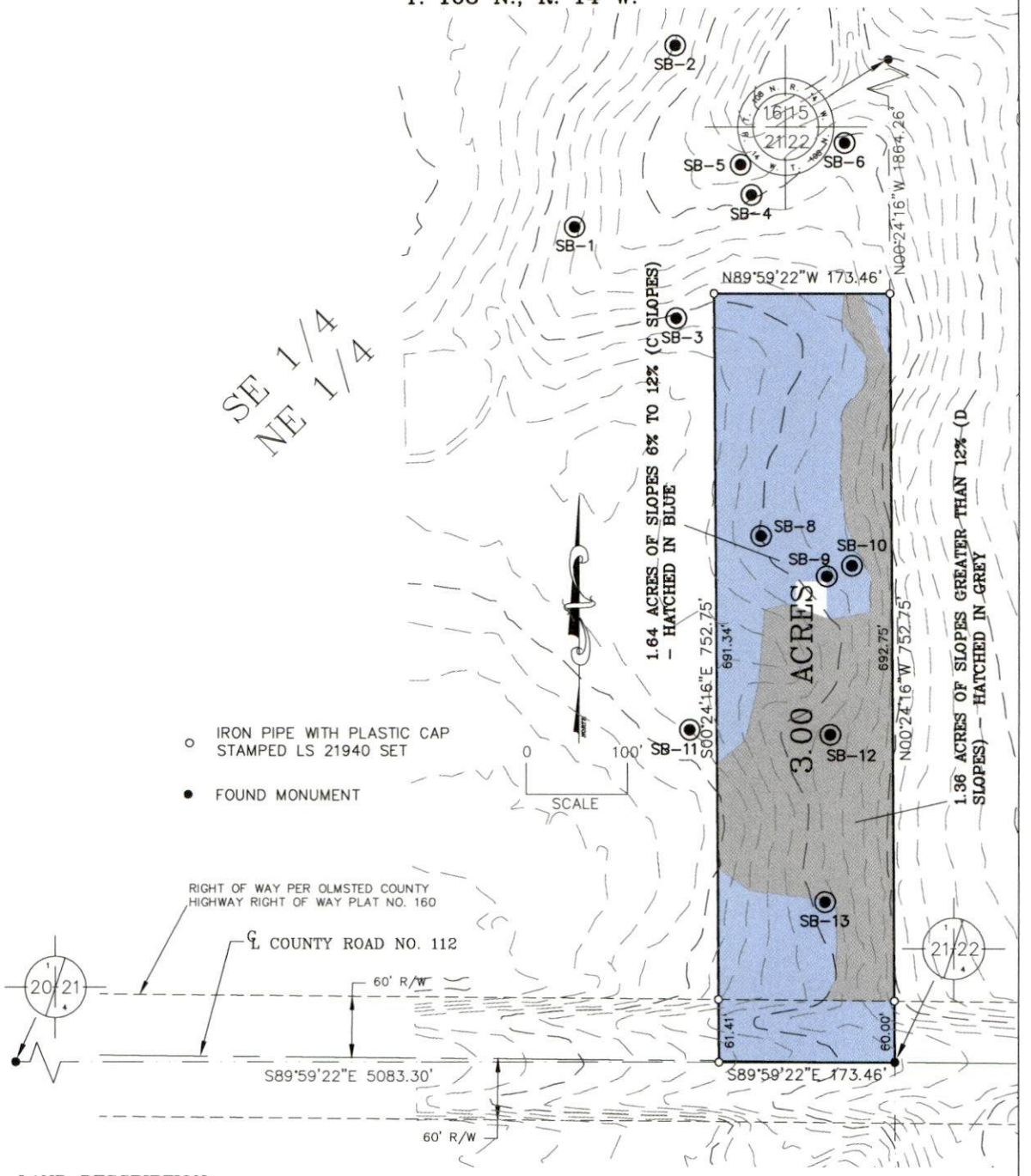

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Prepared For:
Mark Kuehn
10426 28th Ave. NW
Oronoco, MN 55960

SHEET 1 OF 1 | FILE NO:19-143

Attachment B

Soil Boring Profiles

Soil Borings

Location: Mark Kuehn

Boring ID: SB-1; **Rockton 299C; 12% slope** **Date: 12-7-20**

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR2/2						Loam	
10-16	10YR4/3						Clay Loam	
16-26	10YR4/4						Loamy Med. Sand	
26-33	10YR5/4						Clay	Residium
>33							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-2 **Rockton 299D; 13% slope**

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR2/2						Loam	
10-15	10YR4/3						Sandy Clay Loam	
15-21	10YR4/5						Clay Loam	
>21							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-3 **Rockton 299D; 13% slope**

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR2/2						Loam	
10-16	10YR4/3						Clay Loam	
16-26	10YR4/5, 5/4						Sandy Clay Loam	
>26							Limestone frag.	Refusal; lithic contact

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

Soil Borings

Location: Mark Kuehn

Boring ID: SB-4 **Rockton 299C; 7% slope** **Date: 12-7-20**

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR2/1						Loam	
10-15	10YR3/2						Loam	
15-26	10YR4/3						Clay loam	
26-32	10YR4/4						Sandy clay loam	
32-40	10YR4/5						Hvy. Clay loam	
>40							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-5 **Channahon; 472C; 12% slope**

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-11	10YR2/2						Loam	
>11							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-6 **Atkinson; 489B; 6% slope**

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR2/2						Loam	
10-14	10YR3/2						Loam	
14-25	10YR4/3						Clay loam	
25-40	10YR4/4						Sandy clay loam	
40-48	10YR5/4						clay	
>48							Limestone frag.	Refusal; lithic contact

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

Soil Borings

Location: Mark Kuehn

Boring ID: SB-7 — Channahon 472C; 12% slopes — Date: 12-7-20

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-11	10YR2/2						Loam	
11-13	10YR3/2						Channery SCL	
>13							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-8 — Rockton; 299C, 6% slopes

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-16	10YR2/1						Loam	
16-23	10YR2/2						Loam	
23-28	10YR4/3						Clay Loam	
>28							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-9 — Rockton, 299C; 12% slopes

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-7	10YR2/2						Loam	
7-17	10YR4/3						Sandy clay loam	
17-24	10YR5/3						Loamy Med. Sand	
>24							Limestone frag.	Refusal; lithic contact

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

Soil Borings

Location: Mark Kuehn

Boring ID: SB-10 — Channahon 472C; 12% slopes — Date: 12-7-20

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR2/2						Loam	
12-14	10YR3/2						Channery LS	
>14							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-11 — Channahon; 472B — > 5% slope

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-13	10YR2/2						Loam	
13-16	10YR3/2						Clay Loam	
>16							Limestone frag.	Refusal; lithic contact

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

Boring ID: SB-12 & SB-13 — Channahon; 472C; >12% slopes

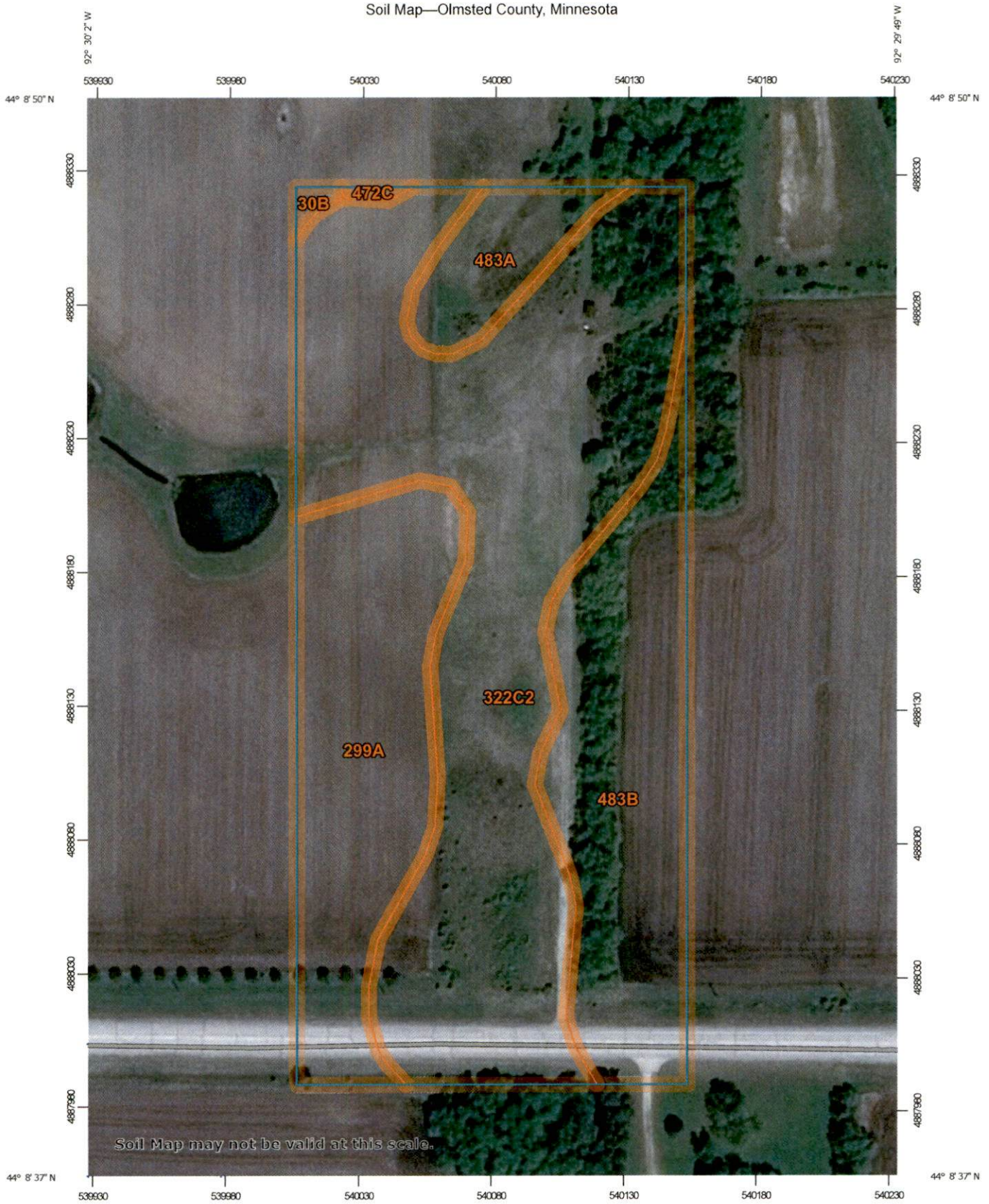
Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR2/2						Loam	
12-16	10YR3/2						Loam/clay loam	
>16							Limestone frag.	Refusal; lithic contact

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

Attachment C

Web Soil Survey- Soil Map Layer

Soil Map—Olmsted County, Minnesota



Map Scale: 1:1,970 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

RECEIVED

OCT 05 2021

OLMSTED COUNTY PLANNING DEPARTMENT

USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

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

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

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

Soil Survey Area: Olmsted County, Minnesota
Survey Area Data: Version 15, Jun 5, 2020

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

Date(s) aerial images were photographed: Apr 23, 2019—May 25, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
30B	Kenyon loam, 2 to 5 percent slopes	0.0	0.4%
299A	Rockton loam, 0 to 1 percent slopes	2.6	20.9%
322C2	Timula silt loam, 6 to 12 percent slopes, moderately eroded	6.4	51.9%
472C	Channahon loam, 6 to 12 percent slopes	0.0	0.2%
483A	Waukee loam, 0 to 2 percent slopes	0.6	5.3%
483B	Waukee loam, 2 to 5 percent slopes	2.6	21.4%
Totals for Area of Interest		**12.3**	**100.0%**

Attachment D

Official Series Descriptions

LOCATION CHANNAHON IL+MI MN OH WI

Established Series
Rev. GOW-JDA-DCH-KDH
05/2011

CHANNAHON SERIES

The Channahon series consists of shallow, well drained soils that formed in loamy material overlying limestone or dolostone bedrock on terraces. Slope ranges from 0 to 25 percent. Mean annual precipitation is about 889 mm (35 inches), and mean annual air temperature is about 10 degrees C (50 degrees F).

TAXONOMIC CLASS: Loamy, mixed, superactive, mesic Lithic Argiudolls

TYPICAL PEDON: Channahon silt loam on a 2 percent slope in a pastured field at an elevation of 162 meters (530 feet) above mean sea level. (Colors are for moist soil unless otherwise stated.)

A1--0 to 13 cm (0 to 5 inches); black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak fine and medium granular structure; friable; common very fine to medium roots; neutral; gradual wavy boundary.

A2--13 to 28 cm (5 to 11 inches); black (10YR 2/1) silt loam, dark gray (10YR 4/1) dry; weak fine and medium subangular blocky structure; friable; common very fine to medium roots; neutral; gradual wavy boundary. [Combined thickness of the A horizon is 10 to 28 cm (4 to 11 inches).]

Bt1--28 to 38 cm (11 to 15 inches); dark yellowish brown (10YR 3/4) silty clay loam; moderate fine and medium subangular blocky structure; friable; common very fine and fine roots; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; many distinct very dark gray (10YR 3/1) organic coatings in root channels and pores; neutral; gradual wavy boundary.

Bt2--38 to 46 cm (15 to 18 inches); brown (10YR 4/3) silty clay loam; moderate medium subangular blocky structure; friable; common very fine to medium roots; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few prominent very dark gray (10YR 3/1) organic coatings in root channels and pores;

2 percent rock fragments; neutral; clear smooth boundary. [Combined thickness of the Bt horizon is 15 to 25 cm (6 to 10 inches).]

2R--46 cm (18 inches); unweathered limestone bedrock; strongly effervescent.

TYPE LOCATION: Grundy County, Illinois; about 6.4 kilometers (4 miles) south and 1.6 kilometers (1 mile) west of Minooka; 158 meters (520 feet) east and 15 meters (50 feet) south of the northwest corner of sec. 35, T.34 N., R. 8 E.; USGS Minooka topographic quadrangle; lat. 41 degrees 23 minutes 20 seconds N. and long. 88 degrees 17 minutes 12 seconds W., NAD 27; UTM Zone 16, 392422 easting and 4582730 northing, NAD 83.

RANGE IN CHARACTERISTICS:
Depth to the base of soil development: 25 to 51 cm (10 to 20 inches)
Depth to the limestone or dolostone bedrock: 25 to 51 cm (10 to 20 inches)
Reaction: slightly acid to moderately alkaline
Depth to carbonates: The lower 5 to 10 cm (2 to 4 inches) of the B horizon in some pedons
Rock fragments: 0 to 20 percent

Ap or A horizon:
Hue: 10YR
Value: 2 or 3
Chroma: 1 or 2
Texture: loam or silt loam
Other features: Thickness of horizons having colors with value and chroma of 3 or less are more than 1/3 the thickness of the solum.

Bt horizon:
Hue: 10YR or 7.5YR
Value: 3 to 5
Chroma: 3 or 4
Texture: loam, silt loam, sandy clay loam, clay loam, or silty clay loam averaging less than 35 percent clay; and from 15 to 50 percent fine or coarser sand.

Some pedons have a BC or C horizon.

COMPETING SERIES: This is the only series in the family. Related series are Dodgeville, Ritchey, and Rockton. Dodgeville and Rockton soils have a lithic contact at depths of 51 to 102 cm (20 to 40 inches). Ritchey soils do not have a mollic epipedon.

GEOGRAPHIC SETTING: Channahon soils are on nearly level to steep level-bedded terraces. Slope gradients are commonly 2 to 6 percent but range from 1 to 25 percent. They formed in medium textured loamy material over limestone or dolostone bedrock. Mean annual air temperature ranges from 7 to 13 degrees C (45 to 55 degrees F), mean annual precipitation ranges from 711 to 1020 mm (28 to 40 inches), frost-free period ranges from 140 to 180 days, and elevation ranges from 156 to 311 meters (512 to 1,020 feet) above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Joliet, Millsdale, Plattville, Rockton, and Romeo soils. The poorly drained Joliet, Millsdale, and Romeo soils are on lower landform positions. The deep Plattville soils and moderately deep Rockton soils are well drained and are on similar landform positions as the Channahon soils.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. The potential for surface runoff ranges from low to high. Saturated hydraulic conductivity is moderately high or high (4.23 to 14.11 micrometers/s). Permeability is moderate.

USE AND VEGETATION: Used as pasture or for general farming. Native vegetation is prairie grasses.

DISTRIBUTION AND EXTENT: Northeastern Illinois, northern Ohio, southeastern Minnesota, and southeastern Wisconsin. Extent is small in MLRA's 95a, 95B, 99, 104, 105, 108A, 110, and 111B.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana.

SERIES ESTABLISHED: Will County, Illinois, 1951.

REMARKS: Diagnostic horizons and features recognized in this pedon are: mollic epipedon-the zone from the surface of the soil to a depth of about 28 cm (11 inches) (A1 and A2 horizons); argillic horizon- the zone from approximately 28 to 46 cm (11 to 18 inches) (Bt1 and Bt2 horizons); lithic contact at a depth of 46 cm (18 inches).

National Cooperative Soil Survey
U.S.A.

LOCATION ROCKTON MN+IA IL IN WI
Established Series
Rev. GAP-HRF-TWN
04/2007

ROCKTON SERIES

The Rockton series consists of moderately deep, well drained soils that formed in 50 to 100 centimeters of loamy sediments with or without a thin paleosol over limestone bedrock. These soils are on plane and convex slopes on summits and shoulder slopes on uplands, high structural benches, strath terraces, and lake plains. Slope ranges from 0 to 25 percent. Mean annual precipitation is about 800 centimeters. Mean annual air temperature is about 8 degrees C.

TAXONOMIC CLASS: Fine-loamy, mixed, superactive, mesic Typic Argiudolls

TYPICAL PEDON: Rockton loam, on a convex slope of 2 percent, on bedrock-controlled, glaciated upland, in a cultivated field. (All colors are for moist soil unless otherwise stated.)

Ap--0 to 25 centimeters; very dark brown (10YR 2/2) loam, very dark grayish brown (10YR 3/2) dry; weak very fine granular structure; very friable; slightly acid; abrupt wavy boundary. (15 to 25 centimeters thick)

AB--25 to 38 centimeters; very dark grayish brown (10YR 3/2) loam, dark grayish brown (10YR 4/2) dry; weak fine subangular blocky structure; very friable; very dark brown (10YR 2/2) coats on faces of peds; moderately acid; clear irregular boundary. (0 to 20 centimeters thick)

Bt1--38 to 53 centimeters; brown (10YR 4/3) loam; moderate fine angular blocky structure; friable; very dark grayish brown (10YR 3/2) coats on faces of peds; few fine pores; few thin clay films on faces of peds; about 3 percent coarse fragments; strongly acid; clear wavy boundary

Bt2--53 to 66 centimeters; dark yellowish brown (10YR 4/4) sandy clay loam; moderate fine subangular blocky structure; friable; brown (10YR 4/3) coats on faces of peds; few variable sized pores; many thin clay films on faces of peds and clay bridges between sand grains; about 3 percent rock fragments; strongly acid; clear wavy boundary. (Combined thickness of the Bt horizon is 10 to 50 centimeters.)

2Bt3--66 to 79 centimeters; dark yellowish brown (10YR 4/4) light clay; moderate fine subangular blocky structure; firm; many thin and medium clay films on faces of peds; about 3 percent rock fragments; moderately acid; clear wavy boundary. (0 to 15 centimeters thick)

2R--79 centimeters; limestone bedrock, weathered along joints and partially fractured in the upper 60 centimeters.

TYPE LOCATION: Major Land Resource Area (MLRA) 105-Northern Mississippi Valley Loess Hills, Olmsted County, Minnesota subset; about 9 miles east and 5 miles south of Rochester; located about 1,295 feet west and 170 feet south of the northeast corner of section 31, T. 106 N., R. 12 W.; USGS Marion topographic quadrangle; lat. 43 degrees 56 minutes 54 seconds N. and long. 92 degrees 18 minutes 14 seconds W., NAD 83.

RANGE IN CHARACTERISTICS:
Mollic epipedon thickness--25 to 49 centimeters
Depth to carbonates--50 to 100 centimeters
Depth to bedrock--50 to 100 centimeters
Clay content in the particle-size control section (weighted average)--24 to 35 percent
Sand content in the particle-size control section (weighted average)--25 to 55 percent

Ap or A horizon:
Hue--10YR
Value--2 or 3
Chroma--1 or 2
Texture--loam, fine sandy loam or silt loam
Clay content--15 to 27 percent
Sand content--20 to 60 percent
Rock fragment content--0 to 10 percent, mixed lithology
Reaction--strongly acid to neutral

AB horizon (when present):
Hue--10YR
Value--2 to 4
Chroma--1 to 3
Texture--loam, fine sandy loam or silt loam
Clay content--15 to 27 percent
Sand content--20 to 60 percent
Rock fragment content--0 to 10 percent, mixed lithology
Reaction--strongly acid to neutral

Bt horizon:
Hue--5YR, 7.5YR, or 10YR
Value--4 or 5
Chroma--3 or 4
Texture--loam, clay loam, sandy clay loam, sandy loam or silt loam
Clay content--15 to 35 percent
Sand content--20 to 60 percent
B/A clay ratio--1.2 to 1.4
Rock fragment content--0 to 10 percent, mixed lithology
Reaction--strongly acid to slightly acid

Some pedons on strath terraces have sandy loam in the lower part of the Bt horizon

2Bt horizon (when present):
Hue--5YR, 7.5YR or 10YR
Value--3 to 6
Chroma--3 to 8
Texture--clay loam, silty clay loam, clay or silty clay
Clay content--35 to 75 percent
Sand content--15 to 35 percent
Rock fragment content--0 to 10 percent, mixed lithology
Reaction--moderately acid to neutral

Some pedons, on strath terraces, have a 3C horizon that is very to extremely channery fine sandy loam, sandy loam, loam, or sandy clay loam

COMPETING SERIES: These are the Atkinson, Burchard, Cokato, Cresco, Cresent, Durand, Friesland, Griswold, Hitt, Jasper, Joslin, Keosauqua, Kishwaukee, Marbletown, Moingona, Morrill, Nuxmaruhanixete, Pana, Parmod, Penfield, Reedslake, Ringwood, Schoolcraft, Shelby, Sibleyville, Velma, and Winnebago series.
Atkinson--do not have limestone bedrock within a depth of 100 centimeters
Burchard--have a clay content of 25 to 35 percent and a sand content of 30 to 45 percent in the lower third of the series control section
Cokato--have a clay content of 18 to 27 percent and a sand content of 35 to 45 percent in the lower third of the series control section
Cresco--have a clay content of 28 to 35 percent in the lower third of the series control section
Cresent--have a clay content of 2 to 10 percent and a sand content of 70 to 95 percent in the lower third of the series control section
Durand--have matrix hues of 5YR or 7.5YR in the middle third of the series control section and have less than 27 percent clay and more than 40 percent sand in the lower

third of the series control section
Friesland--have less than 27 percent clay, less than 40 percent sand, and do not have rock fragments in the lower third of the series control section
Griswold--a rock fragment content of 10 to 35 percent, and calcium carbonate equivalent ranging from 10 to 40 percent in the lower third of the series control section
Hitt--have limestone bedrock within a depth of 150 centimeters and have matrix hues of 2.5YR, 5YR, or 7.5YR in the middle third of the series control section
Jasper--have a clay content of 5 to 20 percent, an average sand content of 45 to 70 percent, and less than 10 percent gravel in the lower third of the series control section
Joslin--have a matrix hue of 2.5YR and a clay content averaging between 35 and 50 percent in the middle third of the series control section
Keosauqua--have a clay content of 2 to 10 percent, a sand content of 80 to 90 percent, and a rock fragment content of 1 to 10 percent in the lower third of the series control section
Kishwaukee--have a clay content of 18 to 30 percent and a rock fragment content of 15 to 35 percent in the lower third of the series control section
Marbletown--have a paralithic contact in sandstone or shale within a depth of 150 centimeters
Moingona--have a clay content of 15 to 30 percent in the lower third of the series control section
Morrill--have matrix hues of 5YR or 7.5YR in the middle third of the series control section and have a clay content of 5 to 30 percent in the lower third of the series control section
Nuxmaruhanixete--have a clay content of 2 to 5 percent and a rock fragment content of 15 to 60 percent in the lower third of the series control section
Pana--have a matrix hue of 5YR or 7.5YR and a rock fragment content of 15 to 35 percent in the lower third of the series control section
Parmod--have calcium carbonate equivalent range of 15 to 40 percent and a rock fragment content of 3 to 15 percent in the lower third of the series control section
Penfield--have a clay content of 12 to 32 percent, a sand content of 45 to 65 percent and a rock fragment content of less than 15 percent in the lower third of the series control section
Reedslake--have a zone in the lower third of the series control section that is saturated for at least 30 consecutive days during April to July in normal years
Ringwood--have less than 20 percent clay and a rock fragment content of 10 and 40 percent in the lower third of the series control section
Schoolcraft--have more than 80 percent sand and a rock fragment content of 0 to 25 percent in the lower third of the series control section
Shelby--have a clay content of 25 to 36 percent in the lower third of the series control section

Sibleyville--have sandstone or sandy and silty shale within a depth of 100 centimeters
Velma--have a reaction range of very strongly acid or strongly acid in the middle part of the series control section and have a clay content of 25 to 35 percent in the lower third of the series control section
Winnebago--have matrix hue of 5YR or 7.5YR in the middle part of the series control section and have less than 20 percent clay in the lower third of the series control section

GEOGRAPHIC SETTING:
Parent material--50 to 100 centimeters of loamy sediments with or without a thin paleosol over limestone bedrock
Landform--plane and convex slopes on summits and shoulder slopes on uplands, high structural benches, strath terraces, and lake plains
Slope--0 to 25 percent
Elevation--135 to 470 meters above sea level
Mean annual air temperature--4 to 12 degrees C
Mean annual precipitation--585 to 1,015 millimeters
Frost-free period--135 to 210 days

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Atkinson, Channahon, Dickinson, and Ostrander soils.
Atkinson--are at higher landscape positions and do not have limestone bedrock within a depth of 100 centimeters
Channahon--are at landscape positions similar to those of the Rockton soils and have a lithic contact within a depth of 50 centimeters
Dickinson--are at lower landscape positions, do not have a lithic contact within a depth of 150 centimeters and have a clay content that averages 10 to 18 percent in the particle-size control section
Ostrander--are at higher landscape positions on interfluves, do not have a lithic contact within a depth of 150 centimeters and have a clay content of 18 to 27 percent in the lower third of the series control section

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:
Drainage class--well drained--a frequently saturated zone does not occur within a depth of 1.8 meters during the wettest periods of normal years
Saturated hydraulic conductivity--1.00 to 10.00 micrometers per second in the loamy sediments, 0.01 to 1.00 micrometers per second in the paleosol (when present) and 0.01 to 10.00 micrometers per second in the limestone bedrock depending on the amount of weathered rock
Surface runoff potential--low to high

USE AND VEGETATION:
Most areas are cultivated. The principal crops are corn, soybeans, small grains, and legume hay. The native vegetation is big bluestem, little bluestem, switchgrass, and other grasses of the tall grass prairie.

DISTRIBUTION AND EXTENT:
Physiographic Division--Interior Plains
Physiographic Province--Central Lowland
Physiographic sections--Eastern lake section, Western lake section, Dissected till plains, Wisconsin driftless section, Till plains
MLRAs--Wisconsin and Minnesota Thin Loess and Till, Southern Part (90B),
Central Minnesota Sandy Outwash (91),
Southern Wisconsin and Northern Illinois Drift Plain (95B),
Southern Michigan and Northern Indiana Drift Plain (98),
Central Iowa and Minnesota Till Prairies (103),
Eastern Iowa and Minnesota Till Prairies (104),
Northern Mississippi Valley Loess Hills (105),
Illinois and Iowa Deep Loess and Drift (108), and
Northern Illinois and Indiana Heavy till Plain (110),
LRRs K, L, and M; northeastern Iowa, northern Illinois, Indiana, southwestern Wisconsin, and southeastern Minnesota
Extent--moderate

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: St. Paul, Minnesota

SERIES ESTABLISHED: Stephenson County, Illinois, in 1939.

REMARKS:
Particle-size control section--the zone from a depth of 38 to 79 centimeters;
series control section--the zone from the surface to a depth of 79 centimeters.

Diagnostic horizons and features recognized in this pedon include:
mollic epipedon--the zone from the surface to a depth of 38 centimeters (Ap and AB horizons);
argillic horizon--the zone from a depth of 38 to 79 centimeters (Bt1, Bt2, and 2Bt3 horizons);
lithic contact--the contact with limestone bedrock at 79 centimeters;
udic moisture regime.

The upper 0.3 to 1.5 meters of limestone may be significantly fractured and may not be a root restrictive layer.

Cation-exchange activity class is inferred from lab data from similar soils in the surrounding area.

Taxonomy version--Keys to Soil Taxonomy, tenth edition, 2006.

ADDITIONAL DATA:: Refer to MAES Central File Code No. 869 for results of some laboratory analysis of the typical pedon.

National Cooperative Soil Survey
U.S.A.

LOCATION TIMULA IL+IA MN MO WI

Established Series
Rev. SLE-JCD
02/2011

TIMULA SERIES

The Timula series consists of very deep well drained soils formed in loess on uplands. Slope ranges from 2 to 60 percent. The mean annual air temperature is about 10.6 degrees C (51 degrees F), and the mean annual precipitation is about 865 mm (34 inches).

TAXONOMIC CLASS: Coarse-silty, mixed, superactive, mesic Typic Eutrudepts

TYPICAL PEDON: Timula silt loam on a northwest-facing 41 percent slope under timber at an elevation of 180 meters (590 feet) above mean sea level, from a Seaton-Timula silt loams, 35 to 60 percent slope map unit. (Colors are for moist soils unless otherwise stated.)

A--0 to 13 cm (0 to 5 inches); dark grayish brown (10YR 4/2) silt loam, light brownish gray (10YR 6/2) dry; weak medium granular structure; friable; many roots; neutral; clear smooth boundary. [8 to 20 cm (3 to 8 inches) thick]

E--13 to 20 cm (5 to 8 inches); brown (10YR 5/3) silt loam; weak medium platy structure; friable; many roots; neutral; clear smooth boundary. [0 to 31 cm (0 to 12 inches) thick]

Bw1--20 to 38 cm (8 to 15 inches); dark yellowish brown (10YR 4/4) silt loam; weak fine and medium subangular blocky structure; friable; common roots; neutral; gradual smooth boundary.

Bw2--38 to 56 cm (15 to 22 inches); yellowish brown (10YR 5/4) silt loam; weak fine and medium subangular blocky structure; friable; few roots; neutral; clear smooth boundary. [Combined thickness of the Bw horizon is 15 to 69 cm (6 to 27 inches).]

C1--56 to 102 cm (22 to 40 inches); light yellowish brown (10YR 6/4) silt; massive; friable; strongly effervescent; moderately alkaline; clear smooth boundary.

C2--102 to 155 cm (40 to 61 inches); pale brown (10YR 6/3) and yellowish brown (10YR 5/6) silt; massive; friable; strongly effervescent; moderately alkaline; clear smooth boundary.

C3--155 to 203 cm (61 to 80 inches); pale brown (10YR 6/3) silt; massive; friable; strongly effervescent; moderately alkaline.

TYPE LOCATION: Henderson County, Illinois; 1,561 feet west and 2,158 feet north of the southeast corner of sec. 10, T. 10 N., R. 5 W.; USGS Oquawka topographic quadrangle; lat. 40 degrees 52 minutes 18 seconds N. and long. 90 degrees 56 minutes 49 seconds W., NAD 83.

RANGE IN CHARACTERISTICS:
Depth to the base of soil sevelopment: 46 to 102 cm (18 to 40 inches)
Depth to carbonates: 46 to 102 cm (18 to 40 inches)
Particle-size control section: coarse silt to fine silt ratio of 1.5:1 or more, and can have as much as 25 percent very fine sand.

Ap or A horizon;
hue: 10YR
Value: 3 or 4
Chroma: 1 to 3
Texture: silt loam or silt
Reaction: slightly acid to slightly alkaline

E horizon:
Hue: 10YR
Value: 4 or 5
Chroma: 2 to 4
Texture: silt loam or silt
Reaction: slightly acid to slightly alkaline
Other features: it has been incorporated into the Ap horizon in some pedons.

An EB horizon is in some pedons.

Bw horizon:
Hue: 10YR
Value: 4 to 6
Chroma: 3 to 6
Texture: silt loam or silt

Reaction: slightly acid to slightly alkaline

Some pedons have a non-Argillic Bt horizon.

BC, Bk, and/or C horizons:
Hue: 0YR, 2.5Y or 5Y
Value: 5 or 6
Chroma: 2 to 6
Texture: silt loam or silt
Reaction: slightly alkaline or moderately alkaline

COMPETING SERIES: These are no other series in the same family.

GEOGRAPHIC SETTING: Timula soils are on hill slopes. They formed in coarse loess deposits generally greater than 3 meters (10 feet) thick. Slope gradients range from 2 to 60 percent. The mean annual air temperature ranges from 6.7 to 12.2 degrees C (44 to 54 degrees F), and the mean annual precipitation ranges from 740 to 1070 mm (29 to 42 inches), frost free days range from 140 to 180 days, and elevation ranges from 152 to 415 meters (500 to 1360 feet) above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Bold, Hamburg, Seaton, Chute, Fayette, and Mt. Carroll soils. Bold and Hamburg soils are on similar landscapes and have sola less than 46 cm (18 inches) thick. Seaton soils are on slightly higher elevations on similar slopes and on rounded ridge tops and have sola more than 102 cm (40 inches) thick. The Chute soils are sandy and are on similar landscapes. The Fayette and Mt. Carroll soils have argillic horizons and are on similar landscape positions, but also are on rounded and gently sloping ridgetops.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained. The potential for surface runoff is low to high. Saturated hydraulic conductivity is moderately high to high (4.23 to 14.11 micrometers per second). Permeability is moderate. Water table or soil moisture status wet is greater than 183 cm (6 feet) from the surface throughout the year in normal years.

USE AND VEGETATION: The gently sloping to moderately steep areas are used for cultivated crops and pasture. The steep and very steep areas are used for pasture or are wooded. Native vegetation is deciduous forest, mainly oak, hickory, and birch.

DISTRIBUTION AND EXTENT: Western Illinois, eastern Iowa, northwest Missouri, southeastern Minnesota, and southwestern Wisconsin. LRRs K and M, MLRAs 90B, 104, 105, 107B, 108B, and 115C. The series is of large extent (more

than 111,000 acres correlated)

MLRA SOIL SURVEY REGIONAL OFFICE (MO)
RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Henderson County, Illinois, 1947.

REMARKS: Diagnostic horizons and features recognized in this pedon are:
Ochric epipedon ? from a depth of 0 to 31 cm (0 to 12 inches) (A and E horizons)
Cambic horizon - from a depth of 20 to 56 cm (8 to 22 inches) (Bw1 and Bw2 horizons).

National Cooperative Soil Survey
U.S.A.

From: BradV
To: "mjkmotors@icloud.com"; Stonelake-Curtis, Hilary; Gross Kristi
Cc: MarkW
Subject: Fwd: Kuehn Property soil evaluation for developable acres
Date: Tuesday, June 29, 2021 2:38:29 PM

Please see Skip's response below.

Kristi, do we need to resubmitt anything, or is this enough to approve the split?

Sent from my Verizon, Samsung Galaxy smartphone
Get Outlook for Android

From: Langer Skip <Langer.skip@CO.OLMSTED.MN.US>
Sent: Tuesday, June 29, 2021 12:23:05 PM
To: BradV <bradv@ggg.to>; lawlerfamilyfarm@yahoo.com <lawlerfamilyfarm@yahoo.com>
Cc: Gross Kristi <gross.kristi@CO.OLMSTED.MN.US>
Subject: RE: Kuehn Property soil evaluation for developable acres

Good Morning Kristi and Brad,

I have received the requested information from G-Cubed regarding this Kuehn property. After conversion of the GGG supplied DWG to GIS layer, we were able to compare the findings in the report dated December 14, 2020, completed by Steve Lawler, professional soil scientist and agree that the soils on the Kuehn property were mischaracterized in the Olmsted Soil Survey.

Soil Survey's, in general, including Olmsted County's, are excellent resources that provide generalized information regarding soil types, their locations and their characteristics & properties across the landscape. The soil survey teams were not able to confirm every soil polygon location across the landscape but picked locations where in-depth boring and soils characterizations were collected and analyzed resulting in a refinement of where specific soil series lay in relation to each other across the landscape. This resource is an excellent guide to help with long term planning and protection and often help identify sensitive areas where we need to take special care in how we manage or plan for future uses including highly erodible land, decorah edge and hydric or wetland type soils units.

The result is that we must often take a closer look at areas proposed for development to ensure that the guidance is accurate and if not, adjust plans accordingly. Steve's work, completing 13 soil borings on 3 acres of the Kuehn property and the supporting soil boring datasheets demonstrate that the soils, contrary to the Soil Survey, do not meet the Timula (322) deeper soil (60-80" depth) descriptions but are of a shallow to bedrock series as indicated by the 12-24" boring depths over weathered, fragmented, channery limestone at which depth refusal was indicated. I agree that the soils are more indicative of the shallow to bedrock Channahon and Rochton soil series.

With the agreed to change in soil series above, I also agree that this would affect the Crop Equivalency Rating (CER) on this property and due to the lower CER rating of a Channahan soil (472B=30, 472C=20) change the rating to a value that may be less than prime, allowing for potential

planning and development to proceed.

Thanks for the opportunity to review and comment,

Skip Langer
Olmsted SWCD

From: BradV <bradv@ggg.to>
Sent: Monday, June 21, 2021 10:43 AM
To: Langer Skip <Langer.skip@CO.OLMSTED.MN.US>
Subject: FW: DWG for Kuehn Project

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Skip,
I am following up on this project as we have not heard of a final determination. Have you had time to check Steve's work? Have you submitted the necessary info to Kristi at Planning and Zoning?

Thanks
Brad

From: BradV
Sent: Friday, January 15, 2021 9:10 AM
To: Langer Skip <Langer.skip@CO.OLMSTED.MN.US>
Subject: DWG for Kuehn Project

Please see attached.

Bradley Vrieze
G-Cubed
Office: 507-867-1666 ext. 201
Mobile: 507-273-5435
Fax: 507-867-1665

Referral Agency Comments

Application No: OR2021-003MB

10/15/2021 **County Public Works**

With the proposed metes and bound increasing the number of parcels adjacent to CR 112, an access application is required to be submitted to Olmsted County PW based on the adopted Olmsted County Access Management Ordinance. Currently there are two access on CR 112. It is likely that one of the access will need to be relocated to 28th Ave, which is the lower functioning road.

10/20/2021 **Environmental Resources**

There are no comments from this agency at this time.