McHenry County
Zoning Board of Appeals - Zoning Hearing
AGENDA

December 4, 2024, 1:30 PM
County Board Conference Room
Administration Building, 667 Ware Rd., Woodstock, IL 60098

Pages

1. CALL TO ORDER
2. ROLL CALL
3. NEW BUSINESS / PUBLIC HEARING
   - 3.1 2024-064 Heartleaf Solar, A1-A1C, Greenwood Twp — 2
4. OLD BUSINESS
5. PUBLIC COMMENT
   Topics unrelated to public hearing - 3-minute time limit per speaker
6. ANNOUNCEMENTS
7. ADJOURNMENT

IN THE MATTER OF THE APPLICATION OF	)
HEARTLEAF SOLAR, LLC, *APPLICANT*	)
FOR AN AMENDMENT OF THE UNIFIED DEVELOPMENT	) LEGAL NOTICE OF PUBLIC HEARING
ORDINANCE OF McHENRY COUNTY, ILLINOIS FOR A	) 2024-064
CONDITIONAL USE	)

Notice is hereby given in compliance with the McHenry County Unified Development Ordinance, that a public hearing will be held before the **McHenry County Zoning Board of Appeals,** in connection with this Ordinance, which would result in a ***CONDITIONAL USE*** for the following described real estate:

PARCEL 1:
THE EAST 330 FEET OF THE WEST 2310 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 2:
THE EAST 330 FEET OF THE WEST 2640 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 3:
THE EAST 330 FEET OF THE WEST 2970 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 4:
THE EAST 169.59 FEET OF THE WEST 3139.59 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 5:
THE EAST 1159.59 FEET OF THE WEST 3139.59 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, (EXCEPTING THE NORTH 665.00 FEET THEREOF) IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PINs: 08-03-200-006, 08-03-200-007, 08-03-200-008, 08-03-200-023, 08-03-200-028

The subject property is located on the south side of Thayer Road approximately three thousand two hundred (3,200) feet east of the intersection of North Queen Anne and Thayer Roads***, with a common address Thayer Road, Wonder Lake, Illinois, in Greenwood Township.***

The subject property is presently zoned ***"A-1" Agriculture District*** and consists of approximately **37.112 acres** with ***"A-1" Agriculture District*** and ***"A-1" Agriculture District with a Conditional Use Permit zoning to the North, and "A-1" Agriculture District zoning to the East, South and West***.

The Applicant is requesting **a CONDITIONAL USE** ***of the subject property to allow for a commercial solar energy facility.***

The Applicant, Heartleaf Solar, LLC is wholly owned by Trajectory Energy Partners, LLC. The manager of Trajectory Energy Partners, LLC is Jonathan Carson. The partners of Trajectory Energy Partners, LLC are: David Lipowicz, Megan Strand, Josh Bushinsky and James Svenstrup. They can be reached at PO Box 310 Highland Park, Illinois. Christopher Dahm, as the sole trustee of The Christopher G. Dahm Trust, property owner, can be reached at 5707 Miller Road, Wonder Lake, Illinois.

A hearing on this Petition will be held on the 4th day of December 2024 at 1:30 P.M. in the County Board conference room at the McHenry County Government Center Administration Building 667 Ware Rd, Woodstock, Illinois at which time and place any person desiring to be heard may be present. The McHenry County Government Center Mailing address is 2200 N. Seminary Avenue, Woodstock, Illinois 60098.

DATED THIS 8TH DAY OF NOVEMBER 2024.

By: Linnea Kooistra, Chair
McHenry County Zoning Board of Appeals
2200 N. Seminary Avenue
Woodstock, IL 60098

Petitions for all Zoning Board of Appeals hearings can be accessed at the following link: www.mchenrycountyil.gov/county-government/new-meeting-portal and choosing the "Agenda" link for the specific meeting date.

Live audio streams of all Zoning Board of Appeals hearings can be accessed at the following link: www.mchenrycountyil.gov/county-government/new-meeting-portal and choosing the "Video" link for the specific meeting date.

HEARTLEAF SOLAR, LLC

5MWac Community Solar Project

Conditional Use Permit Application – McHenry County, IL

Submitted: October 25th, 2024

EXECUTIVE SUMMARY

Heartleaf Solar, LLC (the "Applicant") proposes to develop a 5MWac community solar project on 5 parcels totaling approximately 37 +/- acres currently used for agriculture along Thayer Road in Greenwood Township, McHenry County, Illinois. The Heartleaf Solar, LLC community solar project (the "Solar Project") will be a Commercial Solar Energy Facility located on parcels 08-03-200-006, 08-03-200-007, 08-03-200-008, 08-03-200-023, 08-03-200-028 (the "Project Parcels") owned by the Christopher G. Dahm Trust (the "Landowner"). The Project Parcels are located in the McHenry County A-1 Agricultural District. The Solar Project is described in more detail on the Site Plan set forth in the attached Exhibit A.

The figures and information contained in this application are based on the best available information from desktop and field analyses performed to date, and may be subject to change (within the bounds of applicable laws and permit conditions) based on the final siting of the solar arrays and associated facilities and the ultimate procurement of the Solar Project's equipment.

ABOUT TRAJECTORY ENERGY PARTNERS

Heartleaf Solar, LLC is a limited liability company indirectly owned by Trajectory Energy Partners, LLC ("Trajectory"). Trajectory brings together communities, organizations, and landowners to develop clean energy projects with strong local support. Trajectory team members have built their careers in clean energy and community engagement. They are focused on building quality clean energy projects that are integrated into the local landscape and welcomed in the community.

Trajectory Energy Partners

CONTENTS

ATTACHMENTS & EXHIBITS

Attachment 1: Application Form

Exhibit A: Preliminary Site Plan

Exhibit B: EcoCAT

Exhibit C: Site Survey

Exhibit D: NRI Report

Exhibit E: Landowner Authorization

Exhibit F: Agricultural Impact Mitigation Agreement (AIMA)

Exhibit G: Preliminary Native Pollinator Vegetation Installation and Management Plan

I. SUMMARY OF APPLICATION

Applicant is submitting this application for a Conditional Use Permit pursuant to the requirements set forth in Section 16.20.040: Conditional Use, and Section 16.56.030: Principal Use Standards of the McHenry County, IL Uniform Development Ordinances (the "Zoning Ordinance") as updated on April 18, 2023, and, as applicable, pursuant to 55 ILCS 5/5-12020 (the "Illinois Siting Law"), effective January 27, 2023.

The Solar Project is a conditional use in the A-1 District, pursuant to Section 16.56.030(PP) and Table 16.32-1 of the Zoning Ordinance. Once siting approval is granted, Applicant will obtain a Building Permit prior to beginning construction, consistent with Section 16.56.030(PP).

II. SOLAR PROJECT DESCRIPTION

The Solar Project will be located on 5 parcels totaling approximately 37 +/- acres zoned in the A-1 Agricultural District in Greenwood Township, McHenry County, Illinois. See Exhibit A: Preliminary Site Plan and Exhibit C: Site Survey.

The Solar Project will consist of equipment to generate electricity from solar energy, including rows of photovoltaic cell panels mounted on posts driven into the ground. Applicant plans to install the panels in an east-west configuration on a mounting system that will rotate the panels to track the sun throughout the day. The components of the Solar Project will comply with the current edition of the National Electric Code and be UL listed or meet a comparable safety standard. The panels will be designed to absorb sunlight and will utilize an anti-reflective coating to minimize glare from the Solar Project. A fence will enclose the panels and electrical equipment on site, which will be accessed via a locked gate.

Under Illinois Public Act 102-0662, commonly known as the Climate and Equitable Jobs Act ("CEJA"), the state of Illinois committed funds and ordered the Illinois Power Agency to establish incentives for the creation of community solar projects. The Solar Project is intended to be a community solar project under CEJA, which allows residential and commercial customers to subscribe to the Solar Project. The Solar Project will support CEJA's goals of increasing the adoption and availability of renewable energy to Illinois residents and businesses. The Solar Project is expected to generate enough electricity to power over 1,000 homes.

The Solar Project will provide economic and environmental benefits to the community. McHenry County residents and businesses will have an opportunity to subscribe to the Solar Project. These subscribers will support clean energy in their community while benefiting from electricity bill savings. In addition, the Solar Project will create new tax revenues for McHenry County, provide steady income to the Landowner, and generate economic activity through local construction, materials, and services.

The Solar Project will be designed to integrate into the local landscape and maintained in accordance with the applicable laws and the Zoning Ordinance. Applicant will utilize native prairie landscaping, vegetation maintenance that limits runoff, and other management practices that are in keeping with the community, adjacent uses, and the local ecosystem, and that will be in compliance with the Ordinance.

The Solar Project is intended to operate for at least 30 years, and will be constructed with solar panels with long-term warranties and very low expected rates of replacement. In the event the Solar Project is required to be removed in the future, Applicant will do so in accordance with a proposed decommissioning plan that complies with the requirements of the Zoning Ordinance. The decommissioning plan will be submitted to the County at the building permit stage. In accordance with the Illinois Siting Law and the Zoning Ordinance, Applicant has entered into an executed Agricultural Impact Mitigation Agreement ("AIMA") with the Illinois Department of Agriculture prior to the public hearing. An executed AIMA is attached as Exhibit F.

The Applicant discussed the Solar Project with the McHenry County Planning Staff in a pre-application meeting on October 1, 2024. Applicant also conducted outreach to the County Highway Engineer and the Village of Greenwood.

III. SOLAR PROJECT CONSTRUCTION AND OPERATION

The active construction period for the Solar Project is estimated to be between nine and twelve months. Construction will require trucks no larger than a typical 18-wheeler to deliver materials to the site, and onsite equipment will be used to drive pilings into the ground and install the panels, supports, and tracking equipment. Concrete pads will be poured to support certain electrical equipment.

Once installed and commissioned, the Solar Project requires only periodic maintenance. The Solar Project's performance will be continuously monitored, and engineers and maintenance technicians will visit the Solar Project a few times a year for inspections, routine maintenance, and any required repairs.

IV. APPLICANT INFORMATION

Heartleaf Solar, LLC
% Trajectory Energy Partners, LLC
Attn: Jon Carson
P.O. Box 310
Highland Park, IL 60035
(312) 882-3713
legal@trajectoryenergy.com

On behalf of Landowner contact:
Christopher G. Dahm Trust
% Christopher G. Dahm
5707 Miller Rd.
Wonder Lake, IL 60097
(815) 378-0273

V. CONDITIONAL USE PERMIT APPLICATION REQUIREMENTS

Solar Zoning Ordinance Principal Use Standards – Section 16.56.030(PP)(1)

Section 16.56.030(PP)(1)(a) – EcoCAT

Applicant obtained an EcoCAT report from the Illinois Department of Natural Resources. See Exhibit B. The EcoCAT report states that consultation for the Solar Project has been completed.

Section 16.56.030(PP)(1)(b) – Site Plan

See Exhibit A.

Section 16.56.030(PP)(1)(c) – Zoning Application Packet

The County Zoning Application packet is attached as Attachment 1. The following items are provided in accordance with the requirements stated in the application packet:

- Site Survey: A site survey is attached to the application as Exhibit C.
- Filing fee: Applicant has provided a filing fee of $5,150 concurrent with this application.
- Affidavit of Posting: Applicant will obtain the public hearing notification sign from the Department of Planning and Development at least 15 days in advance of the public hearing and will post such sign in accordance with the Zoning Ordinance. Upon posting, Applicant will submit an Affidavit of Posting to the Department of Planning and Development.
- Natural Resources Information Report: An NRI Report for the Solar Project, which was prepared by the McHenry-Lake County Soil and Water Conservation District, is attached as Exhibit D.
- Landowner Authorization: Letter authorization, in addition to the authorization in the zoning application packet, is attached as Exhibit E.

VI. SOLAR ORDINANCE CONDITIONAL USE STANDARDS

Solar Zoning Ordinance Site Design Standards – Section 16.56.030(PP)(2)

Section 16.56.030(PP)(2)(a) – Setbacks

Solar panels, structures, and electrical equipment, excluding fences and power lines will comply with the applicable setbacks in the Zoning Ordinance. Setbacks are depicted in the Site Plan attached as Exhibit A.

Section 16.56.030(PP)(2)(b) – Height

No structures, excluding power lines for interconnection, will exceed 20 feet in height. Power lines will be placed underground to the extent possible.

Section 16.56.030(PP)(2)(c) – Lighting

Lighting is not currently planned for the Solar Project, however any lighting provided for the project will comply with §16.60.020.

Section 16.56.030(PP)(2)(d) – Glare

The solar panels used for the Solar Project will have a surface that minimizes glare and will comply with §16.60.040D (Lighting and Glare) of the Zoning Ordinance.

Section 16.56.030(PP)(2)(e) – Site Impacts

The Solar Project will be situated to minimize impacts to woodlands, savannas, wetlands, drainage tiles, and encroachment into flood plains and will comply with the Stormwater Management Ordinance, as applicable. Specifically, as depicted on Exhibit A, no significant impacts to woodlands, savannas, wetlands, or floodplains are anticipated as a result of construction of the Solar Project.

Applicant will repair or cause to be repaired any damaged drain tiles where Applicant is determined to be at fault for any such damage, and as required in accordance with any applicable laws and regulations. The AIMA that has been executed by Applicant and the Illinois Department of Agriculture will address the identification and repair of drain tiles by the Applicant.

Terraced embankments were identified by the McHenry-Lake County Soil & Water Conservation District on the Project Parcels of the Solar Project. Applicant is aware of these terraces and is working with the landowner to further investigate these site features. Applicant will adjust the panel placement, if necessary, to accommodate these areas in compliance with the AIMA and any applicable laws and regulations.

Section 16.56.030(PP)(2)(f) – Erosion/Vegetation

The Solar Project will be planted with "low profile" native prairie species, using a mix appropriate for the region and soil conditions in compliance with any applicable Illinois Department of Natural Resources ("INDR") standards.

Section 16.56.030(PP)(2)(g) – Fencing

Fencing will be provided in compliance with the National Electrical Code, as applicable. Any use of barbed wire will comply with the Zoning Ordinance.

Section 16.56.030(PP)(2)(h) – Screening

In addition to the existing trees and other vegetation along Thayer Road, landscape screening will be provided in compliance with the Zoning Ordinance for any part of the facility within five hundred feet of a non-participating residence or road right of way unless otherwise approved. The Preliminary Site Plan attached as Exhibit A depicts the proposed screening areas for the Solar Project. As shown on Exhibit A, new vegetative screening in the form of native shrubs will be provided on the northern boundary of the Solar Project and portions of the western and eastern areas of the Solar Project. In accordance with Section 16.56.030(PP)(2)(h) of the Zoning Ordinance. Additional details of the vegetative screening for the Solar Project are provided in

the Preliminary Native Pollinator Vegetation Installation and Management Plan attached as Exhibit G.

***Section 16.56.030(PP)(2)(i)* – Preliminary Native Pollinator Vegetation Installation and Management Plan**

Prior to issuance of the building permit, Applicant will provide a landscape monitoring & maintenance plan. A Preliminary Native Pollinator Vegetation Installation and Management Plan is attached as Exhibit G.

Section 16.56.030(PP)(2)(j) – AIMA

Prior to the public hearing for this application, Applicant has entered into an Agricultural Impact Mitigation Agreement with the Illinois Department of Agriculture, in accordance with 55 ILCS 5/5-12020(c). An executed AIMA is provided as Exhibit F.

Section 16.56.030(PP)(2)(k) – Road Use Agreement

Prior to issuance of the building permit, Applicant will provide an executed road use agreement between the Applicant and the appropriate governing road and highway jurisdictions or the Illinois Department of Transportation, showing approved entrances.

Solar Zoning Ordinance Safety Standards - Section 16.56.030(PP)(3)

Section 16.56.030(PP)(3)(a) – Emergency Management Plan

Prior to construction, Applicant will prepare an emergency management plan acceptable to the County and the local fire district and shall provide training of emergency personnel, as needed.

Section 16.56.030(PP)(3)(b) – Signage

Applicant will post a sign providing the name of the operator and phone number to be used in case of an on-site emergency.

Section 16.56.030(PP)(3)(c) – Inspections

Provided appropriate advance notice is given, Applicant will grant access to the Solar Project for periodic inspection by the County or the local fire district.

Section 16.56.030(PP)(3)(d) – Panel Maintenance

Applicant will cause any damaged solar panels to be removed, repaired, or replaced within 60 days of discovering damage. Applicant will maintain the Solar Project such that the ground remains free from debris from damaged solar panels.

Solar Zoning Ordinance Abandonment Standards – Section 16.56.030(PP)(4)

Section 16.56.030(PP)(4)(a) – Abandonment

In the event the Solar Project is considered abandoned either in accordance with the AIMA or any other applicable laws or regulations, the Solar Project will be decommissioned and removed

within 12 months from the date deemed abandoned unless otherwise approved by the Zoning Enforcement Officer.

Solar Zoning Ordinance Decommissioning Standards – Section 16.56.030(PP)(5)

Section 16.56.030(PP)(5)(a) – Decommissioning Plan

Prior to issuance of the building permit, Applicant will prepare and submit a decommissioning plan in accordance with the Zoning Ordinance and any other applicable requirements.

Section 16.56.030(PP)(5)(b) – Decommissioning Cost Estimate

Prior to issuance of the building permit, Applicant will submit an engineer's estimate of cost for decommissioning the Solar Project and financial assurance in compliance with the Zoning Ordinance, AIMA, and any other applicable requirements.

Section 16.56.030(PP)(5)(c) – Decommissioning Cost Estimate Update

During the operation of the Solar Project, Applicant will submit a new engineer's estimate of cost for decommissioning every 10 years to the Department of Planning and Development. Upon approval of any such updated estimate of costs by the Zoning Enforcement Officer, Applicant shall revise any financial assurance/surety as necessary to comply with applicable requirements.

Attachment 1

Application form

[Attached]

MCHENRY COUNTY PLANNING AND DEVELOPMENT
2200 N. SEMINARY AVENUE, WOODSTOCK, IL 60098
815-334-4560

Office Use Only

Petition #/Permit # _____

APPLICATION FOR ZONING PETITION – COMMERCIAL SOLAR ENERGY FACILITY

OWNER INFORMATION:	**ATTORNEY or AGENT CONTACT INFORMATION** (If Applicable)**:**
Name Christopher G. Dahm Trust	Name
Address 5707 Miller Rd.	Address
City, St, Zip Wonder Lake, IL 60097	City, St, Zip
Daytime Phone (815) 378-0273	Phone
Email cdahm@dahmco.com	Email

APPLICANT (If other than owner)**:**	**TRUSTEE/BENEFICIARY/OFFICERS/DIRECTORS/CONTRACT PURCHASER** (please use separate page for additional information):
Name Heartleaf Solar, LLC	Name (See attached)
Address P.O Box 310	Address
City, St, Zip Highland Park, IL 60035	City, St, Zip
Daytime Phone (312) 882-3713	Phone
Email legal@trajectoryenergy.com; rgranholm@trajectoryenergy.com	Email

PARCEL INFORMATION:

Address Agricultural land along Thayer Rd.

City Greenwood Township Zip 60097

Parcel/Tax Number 08-03-200-006, 08-03-200-007, 08-03-200-008, 08-03-200-023, 08-03-200-028

Number of Acres approximately 37 +/- (total acreage of all parcels)

Project Details	System Size: 5 MWac	CUP Request: Permit for a solar farm
	Number of Panels: 13,832	Variation Request:
	Fence Height: 7 ft	Map Amendment Request:

Please provide additional information on the back of this page or as a separate Project Narrative.

NARRATIVE: Please use this space to explain your request in detail.
See attached

CONSENT

I/We hereby authorize that the aforementioned applicant, attorney, and agent may act and testify on my behalf as my agent in the matter of this zoning application regarding the property listed above that is the subject of this application.

VERIFICATION

I/We hereby verify and attest to the truth and correctness of all facts, statements and information presented herein.

Christopher Dahm

Owner's Signature

Christopher Dahm

Print Name

Signature

Print Name

SUBSCRIBED and SWORN to before me this 22 day of October, 2024.

NOTARY PUBLIC

OFFICIAL SEAL
LUKE C LOHMEYER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires 2/4/25

NARRATIVE: Please use this space to explain your request in detail.
See attached

CONSENT

I/We hereby authorize that the aforementioned applicant, attorney, and agent may act and testify on my behalf as my agent in the matter of this zoning application regarding the property listed above that is the subject of this application.

VERIFICATION

I/We hereby verify and attest to the truth and correctness of all facts, statements and information presented herein.

Owner's Signature

Jonathan K. Carlson

Print Name

Signature

Print Name

SUBSCRIBED and SWORN to before me this 25th day of October, 2024.

Leah Hanan Jorn

NOTARY PUBLIC

Official Seal
LEAH HANAN JORN
Notary Public, State of Illinois
Commission No. 992050
My Commission Expires June 7, 2025

MCHENRY COUNTY PLANNING AND DEVELOPMENT
2200 N. SEMINARY AVENUE, WOODSTOCK, IL 60098
815-334-4560

Office Use Only

Petition #/Permit # _____

CORPORATE DISCLOSURE

Applications shall be brought in the name of the record title owner or the owner(s) of the beneficial interest through authorized agents. If application is made by a corporation or partnership for any zoning map amendment, variation, or conditional use permit, the application and notice shall identify the names and addresses of all officers and directors and all shareholders/stockholders owning an interest in excess of seven and one-half percent (7.5%)

If an owner, officer, director, shareholder/stockholder is another legal entity and not an individual, we require the same information (name, title, address) for that entity.

Name of Entity:

Name	Title (officers, directors, shareholders/stockholders)	Address (address, city, state, zip)	Percent of ownership interest
Trajectory Energy Partners, LLC	Owner	355 N Lincolwood Rd. Highland Park, IL 60035	100%
Jonathan Carson	Managing Partner	P.O. Box 310 Highland Park, IL 60035	
Josh Bushinsky	Partner	P.O. Box 310 Highland Park, IL 60035	
David Lipowicz	Partner	P.O. Box 310 Highland Park, IL 60035	
Megan Strand	Partner	P.O. Box 310 Highland Park, IL 60035	
James Svenstrup	Partner	P.O. Box 310 Highland Park, IL 60035	

Please attach additional information, if needed.

*Extracted from Title 16: Unified Development Ordinance §16.16.020 §§ A1-4 (2014).

MCHENRY COUNTY PLANNING AND DEVELOPMENT
2200 N. SEMINARY AVENUE, WOODSTOCK, IL 60098
815-334-4560

Office Use Only

Petition #/Permit # _____

LAND TRUST BENEFICIAL DISCLOSURE

Applications shall be brought in the name of the record title owner or the owner(s) of the beneficial interest through authorized agents. This includes applications made by: the trustee or beneficiary of any land trust, corporation or partnership. The application and notice shall identify the names and addresses of all officers, directors, shareholders/stockholders owning an interest in excess of 7.5%. *

If an officer, director, shareholder/stockholder or beneficiary of any land trust is another legal entity and not an individual, we require the same information (name, title, home address) for that entity.

Name of Entity: Christopher G. Dahm Trust

Name	Title (officers, directors, shareholders/stockholders)	Home Address (address, city, state, zip)	Percent of ownership interest
Christopher G. Dahm	Sole Trustee	5707 Miller Rd. Wonder Lake, IL 60097	100%

Please attach additional information, if needed.

*Extracted from Title 16: Unified Development Ordinance §16.16.020 §§ A1-4 (2014).

CONSENT TO ON-SITE INSPECTION

I/We are the owners of record of the real estate which is the subject of this application. Owners of the described real estate do hereby freely and voluntarily consent to inspection of the site of the parcel in question for purposes of determining the appropriateness of the pending proposed zoning petition by the Zoning Enforcement Officer and/or designated representative, McHenry County Zoning Board of Appeals or where applicable, the McHenry County Hearing Officer, and hereby release such persons from any liability based in whole or in part on the inspection of the parcel in question. That in exchange for the above actions by the Applicant(s), McHenry County agrees that the Zoning Enforcement Officer and/or designated representative, member of the Zoning Board of Appeals or, if applicable, the McHenry County Hearing Officer, will inspect the parcel in question prior to considering the evidence presented upon the above application. In the case of Conditional Use applications, if approved by the McHenry County Board, the Zoning Enforcement Officer and/or designated representative many inspect the property periodically to ensure compliance with the adopting ordinance and any conditions therein.

ACCEPTANCE OF FEES FOR TRANSCRIPTION SERVICES

I/We, the applicant(s), verify that I/we are aware of the use of a transcription service utilized by McHenry County to prepare a record of public hearings. Applicant(s) agree to directly reimburse the Department of Planning and Development for all incurred transcript fees and associated costs for hearings before the McHenry County Zoning Board of Appeals or where applicable, the McHenry County Hearing Officer unless determined otherwise by McHenry County. The applicant(s) further recognizes failure to fully reimburse the County prior to the scheduled County Board Date will grant McHenry County the unconditional right to withhold the application from McHenry County Board action. Applicant(s) further understand that transcripts shall be retained by McHenry County as part of the permanent zoning application file.

ZONING APPLICATION INTERPRETATION

I/We understand that the McHenry County Department of Planning and Development Staff will review and evaluate this application per the text of the McHenry County Unified Development Ordinance, the Official Zoning Maps, and any relevant documentation provided by the applicant and otherwise available to the Department, and consult with other staff to create a Legal Notice and staff report.

ACCEPTANCE OF FEES FOR NOTIFICATION

I/We, the applicant(s), authorize the McHenry County Department of Planning and Development Staff to produce the Legal Notice of Public Hearing to be published and mailed per the requirements of Chapter 16.16 (Zoning Application Process) of the McHenry County Code of Ordinances. I/We agree to reimburse the County for the cost of certified mailing and publication to the newspaper, prior to a vote by the McHenry County Board, in order to meet the notification requirements for a public hearing by Illinois State Statute.

Christopher Dahm

Owner's Signature

Christopher Dahm

Print Name

Signature

Print Name

SUBSCRIBED and SWORN to before me this 22 day of October, 2024.

NOTARY PUBLIC

OFFICIAL SEAL
LUKE C LOHMEYER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires 2/4/25

CONSENT TO ON-SITE INSPECTION
I/We are the owners of record of the real estate which is the subject of this application. Owners of the described real estate do hereby freely and voluntarily consent to inspection of the site of the parcel in question for purposes of determining the appropriateness of the pending proposed zoning petition by the Zoning Enforcement Officer and/or designated representative, McHenry County Zoning Board of Appeals or where applicable, the McHenry County Hearing Officer, and hereby release such persons from any liability based in whole or in part on the inspection of the parcel in question. That in exchange for the above actions by the Applicant(s), McHenry County agrees that the Zoning Enforcement Officer and/or designated representative, member of the Zoning Board of Appeals or, if applicable, the McHenry County Hearing Officer, will inspect the parcel in question prior to considering the evidence presented upon the above application. In the case of Conditional Use applications, if approved by the McHenry County Board, the Zoning Enforcement Officer and/or designated representative many inspect the property periodically to ensure compliance with the adopting ordinance and any conditions therein.

ACCEPTANCE OF FEES FOR TRANSCRIPTION SERVICES
I/We, the applicant(s), verify that I/we are aware of the use of a transcription service utilized by McHenry County to prepare a record of public hearings. Applicant(s) agree to directly reimburse the Department of Planning and Development for all incurred transcript fees and associated costs for hearings before the McHenry County Zoning Board of Appeals or where applicable, the McHenry County Hearing Officer unless determined otherwise by McHenry County. The applicant(s) further recognizes failure to fully reimburse the County prior to the scheduled County Board Date will grant McHenry County the unconditional right to withhold the application from McHenry County Board action. Applicant(s) further understand that transcripts shall be retained by McHenry County as part of the permanent zoning application file.

ZONING APPLICATION INTERPRETATION
I/We understand that the McHenry County Department of Planning and Development Staff will review and evaluate this application per the text of the McHenry County Unified Development Ordinance, the Official Zoning Maps, and any relevant documentation provided by the applicant and otherwise available to the Department, and consult with other staff to create a Legal Notice and staff report.

ACCEPTANCE OF FEES FOR NOTIFICATION
I/We, the applicant(s), authorize the McHenry County Department of Planning and Development Staff to produce the Legal Notice of Public Hearing to be published and mailed per the requirements of Chapter 16.16 (Zoning Application Process) of the McHenry County Code of Ordinances. I/We agree to reimburse the County for the cost of certified mailing and publication to the newspaper, prior to a vote by the McHenry County Board, in order to meet the notification requirements for a public hearing by Illinois State Statute.

Owner's Signature

Jonathan K Carson
Print Name

Signature

Print Name

SUBSCRIBED and SWORN to before me
this 25th day of October, 2024.

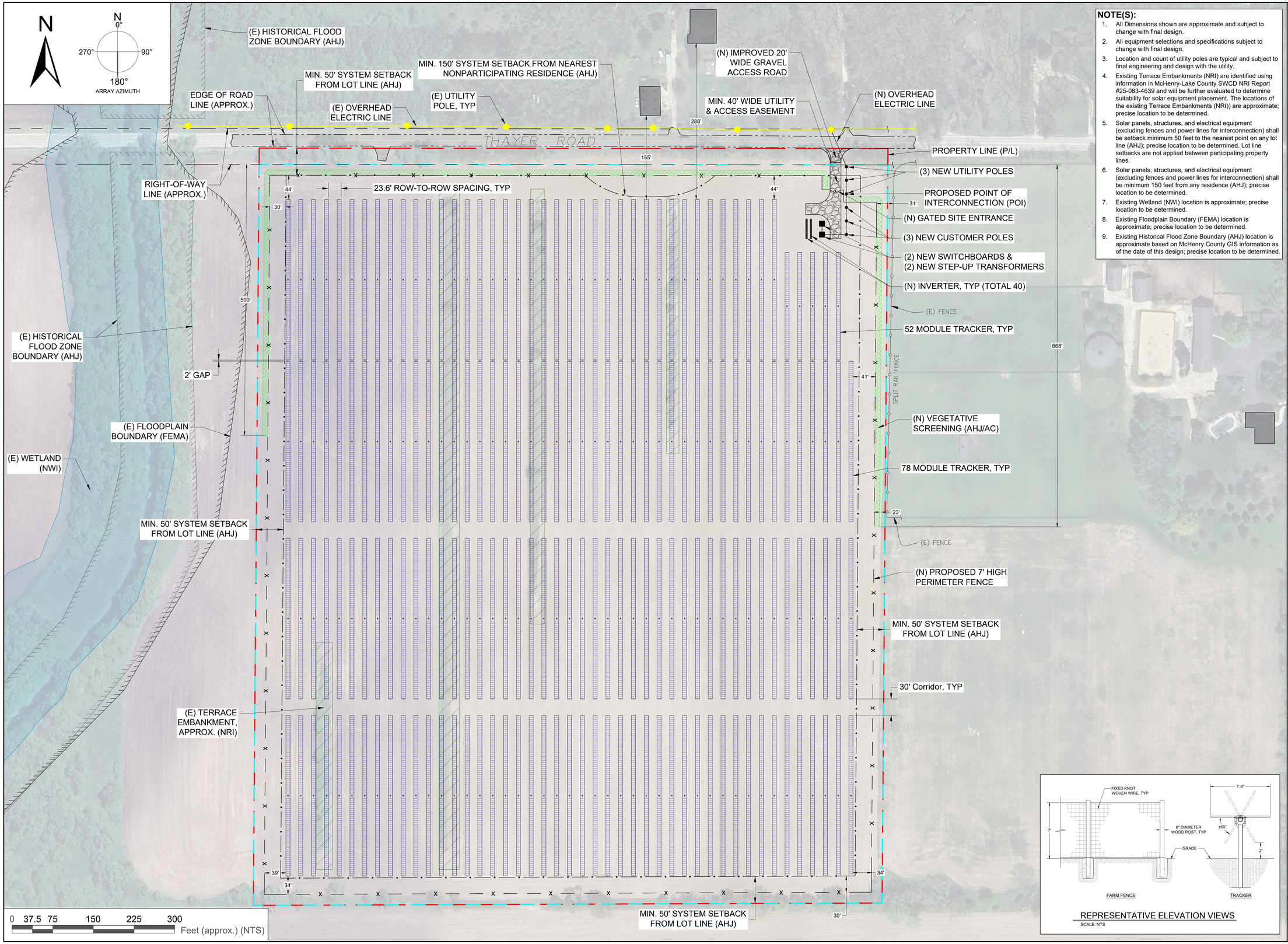
NOTARY PUBLIC

Official Seal
LEAH HANAN JORN
Notary Public, State of Illinois
Commission No. 992050
My Commission Expires June 7, 2025

Exhibit A

Preliminary Site Plan

[Attached]



NOTE(S):

1. All Dimensions shown are approximate and subject to change with final design.
2. All equipment selections and specifications subject to change with final design.
3. Location and count of utility poles are typical and subject to final engineering and design with the utility.
4. Existing Terrace Embankments (NRI) are identified using information in McHenry-Lake County SWCD NRI Report #25-083-4639 and will be further evaluated to determine suitability for solar equipment placement. The locations of the existing Terrace Embankments (NRI)) are approximate; precise location to be determined.
5. Solar panels, structures, and electrical equipment (excluding fences and power lines for interconnection) shall be setback minimum 50 feet to the nearest point on any lot line (AHJ); precise location to be determined. Lot line setbacks are not applied between participating property lines.
6. Solar panels, structures, and electrical equipment (excluding fences and power lines for interconnection) shall be minimum 150 feet from any residence (AHJ); precise location to be determined.
7. Existing Wetland (NWI) location is approximate; precise location to be determined.
8. Existing Floodplain Boundary (FEMA) location is approximate; precise location to be determined.
9. Existing Historical Flood Zone Boundary (AHJ) location is approximate based on McHenry County GIS information as of the date of this design; precise location to be determined.

REPRESENTATIVE ELEVATION VIEWS

SCALE: NTS

Trajectory Energy Partners

Project Name:

Heartleaf Solar, LLC

Drawing Designation:

Conditional Use Permit Design

Project County:

McHenry County

Facility Location:

42.41220°N, -88.39942°W

SYSTEM DETAILS (Preliminary)

SITE AREA	36.31 +/- acres (approx.)
DC SYSTEM SIZE	7,746 kW
AC SYSTEM SIZE	5,000 kW
DC/AC RATIO	1.55
POCC/POI VOLTAGE	34.5 kV
ROW SPACING (GCR)	23.6' (32%)
RACKING SYSTEM	Single-Axis Tracking
MODULE TILT	-60° to 60°
ARRAY AZIMUTH	180°
PV MODULES	
MANUFACTURER	Jinko Solar
MODEL	JKM 560N-72HL4-BDV
DC POWER @ STC	560 W
MAX DC SYS. VOLTAGE	1500 V
MODULES PER STRING	26
MODULE COUNT	13,832
INVERTERS	
MANUFACTURER	Yaskawa Solectria Solar
MODEL	XGI 1500-125
NOMINAL POWER	125 kW
INVERTER COUNT	40

LEGEND

- Property Line
- Site Area Boundary
- System Setback Line
- (N) Proposed 7' High Perimeter Fence
- (N) Underground Medium Voltage Line
- (N) Overhead Medium Voltage Line
- (E) Overhead Electric Line
- (E) Utility Pole
- (N) Improved 20' Wide Gravel Access Road
- (N) Vegetative Screening (AHJ/AC)
- (E) Residences
- Edge of Road Line
- Right-of-Way Line
- (E) Terrace Embankment (NRI)
- (E) Wetlands (NWI)
- (E) Floodplain Boundary (FEMA)
- (E) Historical Flood Zone Boundary (AHJ)
- (E) Fence
- (N) Solar PV Module
- (N) Inverter Rack
- (N) Transformer
- (N) Utility/Customer Pole

PRELIMINARY

NOT FOR CONSTRUCTION

Revision:	Date:
A-1	10/21/2024
Drawn:	**Checked:**
Justin H.	Molly S.

ARCH D SIZE - 24"x36"

Exhibit B

Illinois Department of Natural Resources

EcoCAT

[Attached]

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant: Trajectory Energy Partners, LLC
Contact: Noah Morris
Address: PO Box 310
Highland Park, IL 60035

IDNR Project Number: 2405342
Date: 10/02/2023

Project: Heartleaf Solar, LLC
Address: Thayer Road and Miller Road, Wonder Lake

Description: proposed solar energy infrastructure in McHenry County, IL.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database contains no record of State-listed threatened or endangered species, Illinois Natural Area Inventory sites, dedicated Illinois Nature Preserves, or registered Land and Water Reserves in the vicinity of the project location.

Consultation is terminated. This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Termination does not imply IDNR's authorization or endorsement.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: McHenry

Township, Range, Section:
45N, 7E, 3

IL Department of Natural Resources Contact
Bradley Hayes
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
Planning and Development
Adam Wallen
2200 North Seminary Ave.
Woodstock, Illinois 60098

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

EcoCAT Receipt

Project Code 2405342

APPLICANT	DATE
Trajectory Energy Partners, LLC Noah Morris PO Box 310 Highland Park, IL 60035	10/2/2023

DESCRIPTION	FEE	CONVENIENCE FEE	TOTAL PAID
EcoCAT Consultation	$ 125.00	$ 2.81	$ 127.81

TOTAL PAID $ 127.81

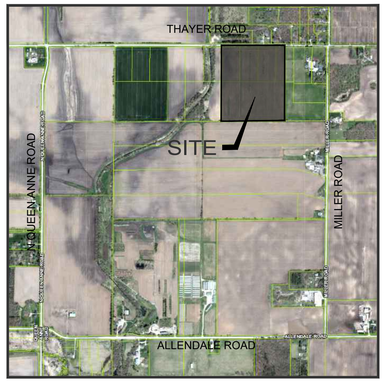
Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702
217-785-5500
dnr.ecocat@illinois.gov

Exhibit C

Site Survey

[Attached]

ALTA/NSPS LAND TITLE SURVEY



LOCATION MAP
NOT TO SCALE

NOTES CORRESPONDING TO TABLE A:

TABLE A ITEMS 1, 2, 3, 4, 6(a), 6(b), 7(a), 8, 9, 11(a), 13, 14, 16, 17, 18 AND 19 ARE SHOWN HEREON THIS SURVEY

TABLE A ITEM 1: ALL MONUMENTS WERE EITHER FOUND OR SET AND ARE SHOWN HEREON THIS SURVEY.

TABLE A ITEM 2: ADDRESS OF THE SURVEYED PROPERTY WAS NOT OBTAINED BY THE SURVEYOR OR OBSERVED WHILE CONDUCTING THE FIELD WORK.

TABLE A ITEM 3: UPON INSPECTION OF THE FLOOD INSURANCE RATE MAP FOR THE SUBJECT AREA, PANEL NUMBER 17111C0070J WITH AN EFFECTIVE DATE OF NOVEMBER 16, 2006 IT APPEARS THAT THE PROPERTY SHOWN HEREON WOULD LINE IN "ZONE X" AREA OF MINIMAL FLOOD HAZARD.

TABLE A ITEM 4: GROSS LAND AREA = 1,616,582 SQUARE FEET OR 37.112 ACRES MORE OR LESS. (TO HEAVY LINES)

TABLE A ITEM 6(a): NO ZONING REPORT PROVIDED.

TABLE A ITEM 6(b): NO ZONING REPORT PROVIDED.

TABLE A ITEM 7(a): EXTERIOR DIMENSIONS OF ALL BUILDINGS AT GROUND LEVEL. NOT APPLICABLE.

TABLE A ITEM 7(b)(1): SQUARE FOOTAGE OF EXTERIOR FOOTPRINT OF ALL BUILDINGS AT GROUND LEVEL. NOT APPLICABLE.

TABLE A ITEM 8: ALL SUBSTANTIAL FEATURES OF THE SUBJECT PROPERTY ARE SHOWN ON THE SURVEY.

TABLE A ITEM 9: NO PARKING SPACES WERE OBSERVED AT THE TIME OF SURVEY.

TABLE A ITEM 11(a): MANHOLES, INLETS, CATCH BASINS, VAULTS, VALVES AND ANY OTHER SUCH STRUCTURES SHOWN HEREON ARE FROM FIELD LOCATIONS OF SUCH, AND ONLY REPRESENT SUCH UTILITY IMPROVEMENTS WHICH ARE VISIBLE FROM ABOVE GROUND OR ACCESSIBLE THROUGH STRUCTURES AT THE TIME OF SURVEY. OTHER UTILITIES NOT SHOWN HEREON THIS SURVEY MAY EXIST. PLANS AND/OR REPORTS WERE NOT PROVIDED BY THE CLIENT.

TABLE A ITEM 13: NAMES OF ADJOINING OWNERS ACCORDING TO CURRENT TAX RECORDS SHOWN ON SURVEY.

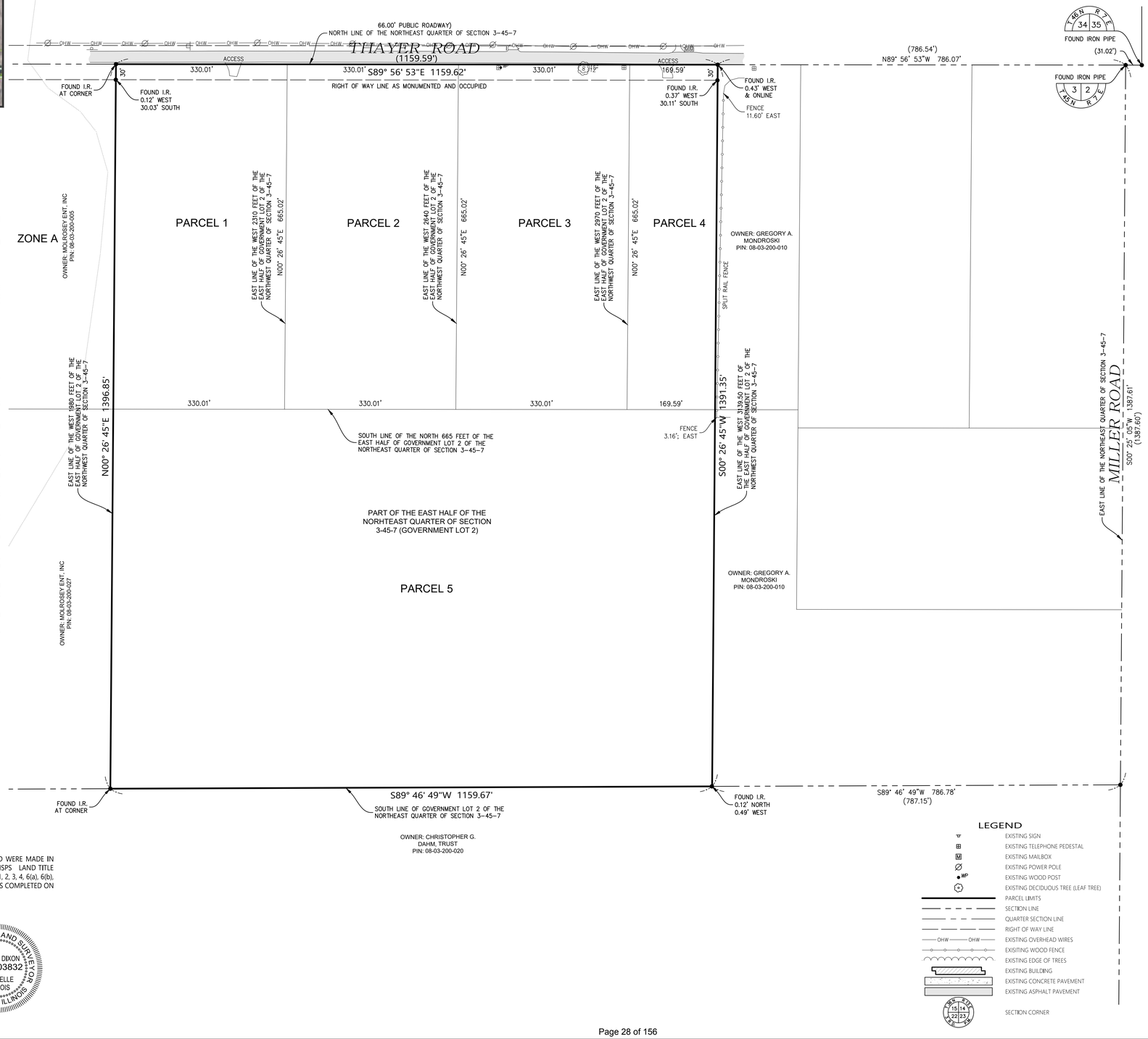
TABLE A ITEM 14: DISTANCE TO THE NEAREST INTERSECTING STREET SHOWN ON SAID SURVEY.

TABLE A ITEM 16: NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITIONS WERE OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.

TABLE A ITEM 17: NO PROPOSED CHANGES IN STREET RIGHT OF WAY LINES HAVE BEEN DISCOVERED. NO EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION OR REPAIRS WERE OBSERVED IN THE PROCESS OF CONDUCTING THE FIELD WORK.

TABLE A ITEM 18: NO PLOTTABLE OFFSITE EASEMENTS WERE DISCLOSED IN DOCUMENTS PROVIDED TO OR OBTAINED BY THE SURVEYOR.

TABLE A ITEM 19: REGIONAL LAND SERVICES, LLC CARRIES PROFESSIONAL LIABILITY INSURANCE IN THE MINIMUM AMOUNT OF $1,000,000.



SCALE: 1" = 100'
0 100 200 300

BASIS OF BEARINGS:
BEARINGS SHOWN HEREON BASED ON ILLINOIS STATE PLANE COORDINATES, ZONE EAST, N.A.D. 1983

LEGAL DESCRIPTION

PARCEL 1:
THE EAST 330 FEET OF THE WEST 2310 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 2:
THE EAST 330 FEET OF THE WEST 2640 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 3:
THE EAST 330 FEET OF THE WEST 2970 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 4:
THE EAST 169.59 FEET OF THE WEST 3139.59 FEET OF THE NORTH 665 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND OF GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

PARCEL 5:
THE EAST 1159.59 FEET OF THE WEST 3139.59 FEET OF THE EAST HALF OF GOVERNMENT LOT 2 OF THE NORTHWEST QUARTER AND GOVERNMENT LOT 2 OF THE NORTHEAST QUARTER OF SECTION 3, TAKEN AS ONE TRACT, (EXCEPTING THE NORTH 665.00 FEET THEREOF) IN TOWNSHIP 45 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN MCHENRY COUNTY, ILLINOIS.

NOTES CORRESPONDING TO SCHEDULE B, PART II:

1. THIS SURVEY DOES NOT CONSTITUTE A TITLE SEARCH BY THE SURVEYOR. ALL INFORMATION REGARDING DEEDS, EASEMENTS, RIGHTS, COVENANTS, CONDITIONS, RESTRICTIONS, ADJOINERS AND/OR OTHER DOCUMENTS THAT MIGHT EFFECT TITLE TO THE PROPERTY DEPICTED HEREON WAS APPLIED FROM CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NO. 5245-2301067, DATED JULY 6, 2023 PROVIDED TO THE SURVEYOR BY THE CLIENT, TITLE COMPANY AND/OR THEIR REPRESENTATIVES.

2. SCHEDULE B ITEMS 1 THROUGH 7 ARE NOT SURVEY RELATED.

3. SCHEDULE B ITEM 8: PERMANENT TAX NUMBER 08-03-200-006 AS LISTED IN TITLE COMMITMENT.

4. SCHEDULE B ITEM 9: PERMANENT TAX NUMBER 08-03-200-007 AS LISTED IN TITLE COMMITMENT.

5. SCHEDULE B ITEM 10: PERMANENT TAX NUMBER 08-03-200-008 AS LISTED IN TITLE COMMITMENT.

6. SCHEDULE B ITEM 11: PERMANENT TAX NUMBER 08-03-200-023 AS LISTED IN TITLE COMMITMENT.

7. SCHEDULE B ITEM 12: PERMANENT TAX NUMBER 08-03-200-028 AS LISTED IN TITLE COMMITMENT.

8. SCHEDULE B ITMES 13 THROUGH 23 ARE NOT SURVEY RELATED.

NOTES:

1. THE LEASE PREMISES HAS DIRECT ACCESS TO THAYER ROAD, FOR PUBLIC USE, WITHOUT GAPS OR GORES.

2. THE PROPERTY DESCRIBED HEREON IS THE SAME PROPERTY DESCRIBED IN THAT CERTAIN TITLE COMMITMENT ISSUED BY CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NUMBER 5245-2301067, DATED AS OF JULY 6, 2023.

3. ALL SUBSTANTIAL FEATURES OBSERVED DURING THE FIELDWORK ARE PLOTTED HEREON, INCLUDING ANY ABOVE-GROUND UTILITIES.

4. LOCATION OF ALL UTILITIES AND SUBSTRUCTURES ARE APPROXIMATELY BASED ON SURFACE EVIDENCE AND EXISTING PLANS, AS PROVIDED BY THE CLIENT.

5. NO ENCROACHMENTS WERE OBSERVED AT THE TIME OF THE SURVEY.

LEGEND

- EXISTING SIGN
- EXISTING TELEPHONE PEDESTAL
- EXISTING MAILBOX
- EXISTING POWER POLE
- EXISTING WOOD POST
- EXISTING DECIDUOUS TREE (LEAF TREE)
- PARCEL LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- EXISTING OVERHEAD WIRES
- EXISITING WOOD FENCE
- EXISTING EDGE OF TREES
- EXISTING BUILDING
- EXISTING CONCRETE PAVEMENT
- EXISTING ASPHALT PAVEMENT
- SECTION CORNER

P.U.E. PUBLIC UTILITY EASEMENT
P.U. & D.E. PUBLIC UTILITY & DRAINAGE EASEMENT
B.S.L. BUILDING SETBACK LINE
(R) RECORD BEARING
CB CHORD BEARING
CH CHORD
BDG BUILDING
CLF CHAIN LINK FENCE
WDF WOOD FENCE
BWF BARBED WIRE FENCE
WIF WROUGHT IRON FENCE
ASPH ASPHALT PAVEMENT
FIP OR SIP FOUND OR SET IRON PIPE
FCM OR SCM FOUND OR SET CONCRETE MONUMENT
FCN OR SCN FOUND OR SET CROSS NOTCH
FPK OR SPK FOUND OR SET PARKER-KALON NAIL

SURVEYORS NOTES:
1) ALL DIMENSIONS ARE GIVEN IN FEET AND DECIMAL THEREOF.
2) BEFORE STARTING ANY CONSTRUCTION OF IMPROVEMENTS OR FENCES, FIELD MONUMENTATION SHOULD BE ESTABLISHED.
3) REFER TO YOUR DEED, TITLE POLICY AND LOCAL ORDINANCES FOR RESTRICTIONS, BUILDING LINES AND EASEMENTS.
4) PARCEL DIMENSIONS AND/OR BEARINGS WITHIN PARENTHESIS ABBREVIATED REC ARE RECORDED DOCUMENT DIMENSIONS AND/OR BEARINGS

STATE OF ILLINOIS)
) SS
COUNTY OF OGLE)

TO: HEARTLEAF SOLAR, LLC
CHICAGO TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 1, 2, 3, 4, 6(a), 6(b), 7(a), 7(b)(1), 8, 9, 11(a), 13, 14, 16, 17, 18 AND 19 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON AUGUST 24, 2024. DATE OF PLAT OR MAP: 09/10/2024

REGIONAL LAND SERVICES, LLC
PROFESSIONAL DESIGN FIRM NUMBER 007858-0010

Rudy P. Dixon — 09/10/2024
RUDY P. DIXON — DATE
ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 035-003832
LICENSE EXPIRES NOVEMBER 30, 2024
EMAIL: rdixon@regional-ls.com
WWW.REGIONAL-LS.COM

THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY.

PROFESSIONAL LAND SURVEYOR
RUDY P. DIXON
035-003832
ROCHELLE
ILLINOIS
STATE OF ILLINOIS

UTILITY STATEMENT
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES DECLARE THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES.

811 Know what's below. Call before you dig. JULIE (OUTSIDE CHICAGO AREA) CALL 48 HOURS (2 WORKING DAYS) BEFORE YOU DIG 811 or 1-800-892-0123

DRAWN BY: RVH
DATE: 09/10/2024
CHECKED BY: RPD
DATE: 09/10/2024
FIELD WORK COMPLETED
DATE: 08/24/2024

PROJECT NUMBER: 240113
SCALE: 1" = 100'
ORDERED BY: HEARTLEAF FIELD
PROPERTY ADDRESS: THAYER ROAD WONDER LAKE, IL

REV	DESCRIPTION	DATE
0	ISSUED	09/30/2024

CLIENT:
HEARTLEAF SOLAR, LLC
THAYER ROAD, WONDER LAKE, IL 60097

REGIONAL LAND SERVICES
9512 FOWLER ROAD
ROCHELLE, ILLINOIS 61068
PHONE: (618) 559-2260

PROJECT NUMBER: 240216
DATE: 09/10/2024
SHEET: 1 OF 1
DRAWING NUMBER: ALTA

Exhibit D

NRI Report

[Attached]

McHENRY-LAKE COUNTY SOIL & WATER CONSERVATION DISTRICT

NATURAL RESOURCES INFORMATION REPORT

24-083-4639

September 25, 2024

This report has been prepared for:
Heartleaf Solar, LLC

Contact Person:
Mack Gapinski

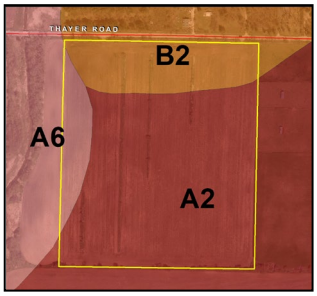
PREPARED BY:
McHENRY-LAKE COUNTY SOIL & WATER CONSERVATION DISTRICT
1648 S. EASTWOOD DR.
WOODSTOCK, IL 60098
PHONE: (815) 338-0444
www.mchenryswcd.org

The McHenry-Lake County Soil & Water Conservation District is an equal opportunity provider and employer.

EXECUTIVE SUMMARY OF NRI REPORT #24-083-4639

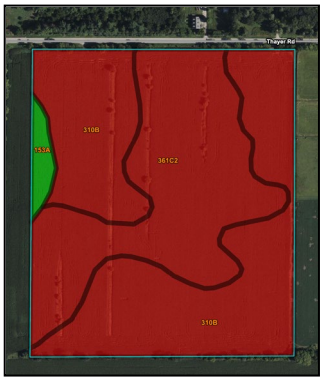
It is the opinion of the McHenry-Lake County Soil and Water Conservation District Board of Directors that this report as summarized on these pages are pertinent to the requested zoning change.

Groundwater Contamination Potential and Recharge Areas:



Aquifer Sensitivity Map (*This is the area beneath the soil profile down to bedrock)
The Geologic features map indicates the parcel is comprised of 26.01 acres of A2, 3.11 acres of A6, and 7.49 acres of B2 geologic limitations. A2 and A6 have a high contamination potential and B2 has a moderately-high contamination potential.

Sensitive Aquifer Recharge Areas (Includes the soil profile and underlying geology).
The Sensitive Aquifer Recharge Map indicates 18.87 acres of the parcel is within a Sensitive Aquifer Recharge Area (identified in red).



Soil Leachability Map (This is only the soil profile within the parcel from the surface down to approx. 5 feet).
The Soil Leachability Index 35.7 acres or 97.5% of the parcel has high leaching potentials identified (identified in red).

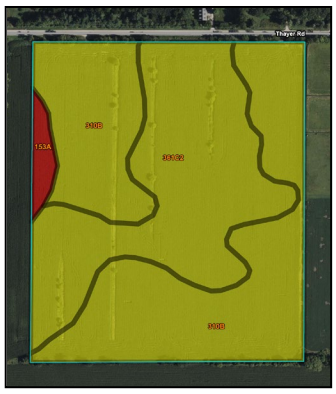
Soil Permeability (This is only the soil profile within the parcel from the surface down to approx. 5 feet. Soil permeability is a reflection of the speed in which water (with or without pollutants) can move through the soil profile.)
The USDA-NRCS Soil Survey Map of the area indicates there are no highly permeable soils on the parcel.

Soil Limitations (This evaluates the parcel from the surface down to approximately 5 feet.):

Erosion Ratings
The NRCS Soils Survey indicates 15.2 acres or 41.4% of the parcel contains Highly Erodible Soils. The McHenry-Lake SWCD has staff members certified in Sediment and Erosion Control and can aid the petitioner by reviewing erosion control plans and make recommendations.

Prime Farmland Soils
The Natural Resources Conservation Service (NRCS) Soil Survey indicates 35.7 acres or 97.5% of the parcel is comprised of prime farmland soils (identified in green) and 0.9 acres or 2.5% of the parcel is comprised of prime farmland if drained soils (identified in light green).

Hydric Soils
The NRCS Soil Survey identifies 0.9 acres or 2.5% of hydric soils (identified in orange) on the parcel.



Ground Based Solar Arrays
The NRCS Soils Survey indicates 0.9 acres or 2.5% of the parcel has severe limitations for Soil Anchored Solar Arrays (identified in red). The reason for the limitation can be found on page 23 of the report.

Floodplain Information:

The Flood Insurance Rate Map
The map indicates the parcel is outside of the 100-year floodplain.

Flood of Record Map (Hydrologic Atlas)
The Flood of Record Map for this area indicates the parcel has no previously flooded.

Wetland Information:

USDA-NRCS Wetland Inventory
The NRCS Wetlands Inventory indicates there are no wetlands on the parcel.

ADID Wetland Inventory
The ADID study indicates there are no wetlands on the parcel.

Cultural Resources: Office maps indicate there is a high probability for cultural resources within the parcel.

Preserved or Recognized Ecological Sites: Office maps indicate there are no designated Natural Areas within 500 feet of the parcel.

Woodlands: None identified.

Agricultural Areas: Office Maps indicate there are no State designated agricultural area on the parcel.

Land Evaluation Site Assessment (LESA): The Land Evaluation Score for the parcel is 74.4. A Site Assessment was not completed.

ADDITIONAL CONCERNS

There are 4 terraces that cross the property in a north to south alignment. A terrace is an earth embankment or a combination ridge and channel, constructed across the field slope. The purpose of this conservation practice is to reduce erosion, trap sediment, manage runoff, and conserve soil moisture. Typically terrace systems contain an outlet which is either vegetated or underground via a tile system. Care should be exercised around the terraces to ensure any tile system is not impacted by the proposed development. Impacts can result in the terrace system's failure.

It is recommended that areas between panels and within the buffers, should be planted to a native prairie mix to help increase water infiltration and reduce runoff from the site. It is recommended that a planting and maintenance plan be developed with the landowner to ensure that noxious weeds are controlled, and native plantings are properly installed and managed. The petitioner is encouraged to add pollinator species to this planting plan in accordance with the Illinois Department of Natural Resources and McHenry County requirements.

We have not received notification that an Agriculture Mitigation Agreement with the Illinois Department of Agriculture has been completed. The agreement should address decommissioning of the site after the lifespan of the facility has been reached. It is recommended that all panels, piles, transformers, underground lines, and fencing be completely removed from the site. If underground lines are to remain, they should have at least 5 feet of cover to adequately allow farming operations to commence after the facility's removal. A template can be found on the Illinois Department of Agriculture's website. Please contact Jeffrey Evers for more information.

JEFFREY EVERS | AGRICULTURAL LAND & WATER RESOURCE SPECIALIST III
Land and Water Resources

Illinois Department of Agriculture
John R. Block Building | 801 E. Sangamon Ave., P.O. Box 19281 | Springfield, IL 62794-9281
(O) 217-785-5594 | (F) 217-557-0993 | (TTY) 866-287-2999 | jeff.evers@illinois.gov

NATURAL RESOURCE INFORMATION REPORT (NRI)

NRI Report Number	24-083-4639
Applicant's Name	Heartleaf Solar, LLC
Size of Parcel	37 acres
Zoning Change	A-1 to Commercial Solar Facility
Parcel Index Number(s)	08-03-200-006, 08-03-200-007, 08-03-200-008, 08-03-200-023, 08-03-200-028
Common Location	Undefined
Contact Person	Mack Gapinski

Copies of this report or notification of the proposed land-use change were provided to:	***yes***	***no***
The Applicant/Contact Person	x	
The Village/City/County Planning and Zoning Department or Appropriate Agency	x	

Report Prepared By: *Spring M. Duffey* Position: *Executive Director*

Contents *Page*

PURPOSE AND INTENT

The purpose of this report is to inform officials of the local governing body and other decision-makers with natural resource information. This information may be useful when undertaking land use decisions concerning variations, amendments or relief of local zoning ordinances, proposed subdivision of vacant or agricultural lands and the subsequent development of these lands. This report is a requirement under Section 22.02a of the Illinois Soil and Water Conservation Districts Act.

The intent of this report is to present the most current natural resource information available in a readily understandable manner. It contains a description of the present site conditions, the present resources, and the potential impacts that the proposed change may have on the site and its resources. The natural resource information was gathered from standardized data, on-site investigations and information furnished by the petitioner. This report must be read in its entirety so that the relationship between the natural resource factors and the proposed land use change can be fully understood.

Due to the limitations of scale encountered with the various resource maps, the property boundaries depicted in the various exhibits in this report provide a generalized representation of the property location and may not precisely reflect the legal description of the PIQ (Parcel in Question).

This report, when used properly, will provide the basis for proper land use change decisions and development while protecting the natural resource base of the county. It should not be used in place of detailed environmental and/or engineering studies that are warranted under most circumstances, but in conjunction with those studies.

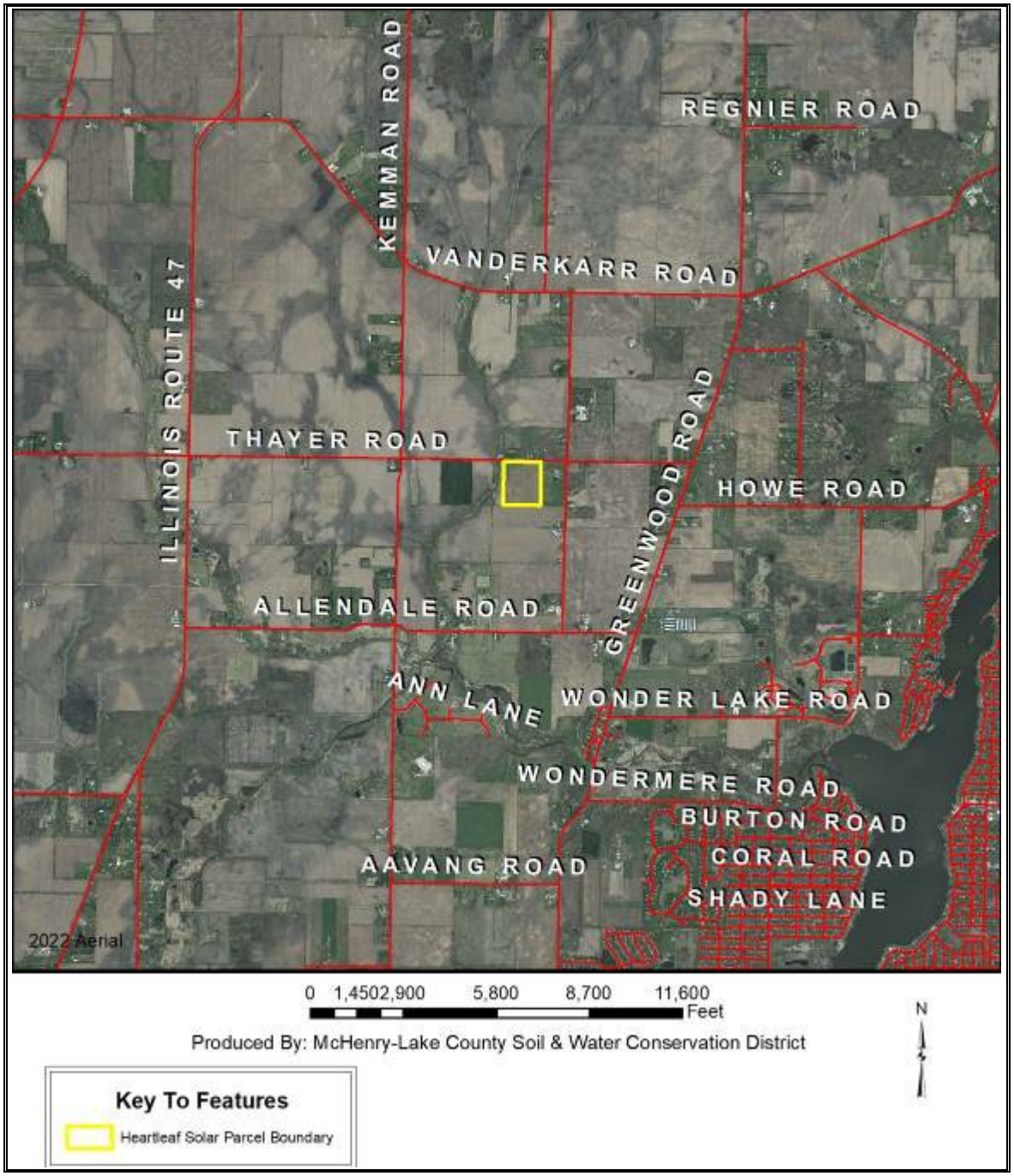
The conclusions of this report in no way indicate that a certain land use is not possible, but it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Any questions on the technical data supplied in this report or if anyone feels that they would like to see more additional specific information to make the report more effective, please contact:

McHenry-Lake County Soil & Water Conservation District
1648 S. Eastwood Dr.
Woodstock, IL 60098
Phone: (815) 338-0444 ext. 3
www.mchenryswcd.org
E-mail: Spring.Duffey@il.nacdnet.net

PARCEL LOCATION

Location Map for Natural Resources Information Report # 24-083-4639

In the Northeast Quarter of Section 3, Township 45 North, Range 7 East on 37 acres. This parcel is located on the south side of Thayer Road, west of the intersection of Thayer Road and Miller Road, McHenry County, IL.



ARCHAEOLOGIC/CULTURAL RESOURCES

Simply stated, cultural resources are all the past activities and accomplishments of people. They include the following: buildings; objects made or used by people; locations; and less tangible resources, such as stories, dance forms, and holiday traditions. The Soil and Water Conservation District most often encounters cultural resources as historical properties. These may be prehistoric or historical sites, buildings, structures, features, or objects. The most common type of historical property that the Soil and Water Conservation District may encounter is non-structural archaeological sites. These sites often extend below the soil surface, and must be protected against disruption by development or other earth moving activity if possible. Cultural resources are *non-renewable* because there is no way to "grow" a site to replace a disrupted site.

Landowners with historical properties on their land have ownership of that historical property. However, the State of Illinois owns all of the following: human remains, grave markers, burial mounds, and artifacts associated with graves and human remains.
Non-grave artifacts from archaeological sites and historical buildings are the property of the landowner. The landowner may choose to disturb a historical property, but may not receive federal or state assistance to do so. If an earth moving activity disturbs human remains, the landowner must contact the county coroner within 48 hours.

Office maps indicate there is a high probability for cultural resources within the parcel.

ECOLOGICALLY SENSITIVE AREAS

What is Biological Diversity and Why Should it be Conserved?[1]

Biological diversity, or biodiversity, is the range of life on our planet. A more thorough definition is presented by botanist Peter H. Raven: "At the simplest level, biodiversity is the sum total of all the plants, animals, fungi and microorganisms in the world, or in a particular area; all of their individual variation; and all of the interactions between them. It is the set of living organisms that make up the fabric of the planet Earth and allow it to function as it does, by capturing energy from the sun and using it to drive all of life's processes; by forming communities of organisms that have, through the several billion years of life's history on Earth, altered the nature of the atmosphere, the soil and the water of our Planet; and by making possible the sustainability of our planet through their life activities now." (Raven 1994)

[1]Taken from *The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunities*, prepared by the Nature Conservancy Great Lakes Program 79W. Monroe Street, Suite 1309, Chicago, IL 60603, January 1994

It is not known how many species occur on our planet. Presently, about 1.4 million species have been named. It has been estimated that there are perhaps 9 million more that have not been identified. What is known is that they are vanishing at an unprecedented rate. Reliable estimates show extinction occurring at a rate several orders of magnitude above "background" in some ecological systems. (Wilson 1992, Hoose 1981)

The reasons for protecting biological diversity are complex, but they fall into four major categories.

First, loss of diversity generally weakens entire natural systems. Healthy ecosystems tend to have many natural checks and balances. Every species plays a role in maintaining this system. When simplified by the loss of diversity, the system becomes more susceptible to natural and artificial perturbations. The chances of a system-wide collapse increase. In parts of the midwestem United States, for example, it was only the remnant areas of natural prairies that kept soil intact during the dust bowl years of the 1930s. (Roush 1982)

Simplified ecosystems are almost always expensive to maintain. For example, when synthetic chemicals are relied upon to

control pests, the target species are not the only ones affected. Their predators are almost always killed or driven away, exasperating the pest problem. In the meantime, people are unintentionally breeding pesticide-resistant pests. A process has begun where people become perpetual guardians of the affected area, which requires the expenditure of financial resources and human ingenuity to keep the system going.

A second reason for protecting biological diversity is that it represents one of our greatest untapped resources. Great benefits can be reaped from a single species. About 20 species provide 90% of the world's food. Of these 20, just three, wheat, maize and rice-supply over one half of that food. American wheat farmers need new varieties every five to 15 years to compete with pests and diseases. Wild strains of wheat are critical genetic reservoirs for these new varieties.

Further, every species is a potential source of human medicine. In 1980, a published report identified the market value of prescription drugs from higher plants at over $3 billion. Organic alkaloids, a class of chemical compounds used in medicines, are found in an estimated 20% of plant species. Yet only 2% of plant species have been screened for these compounds. (Hoose 1981)

The third reason for protecting diversity is that humans benefit from natural areas and depend on healthy ecosystems. The natural world supplies our air, our water, our food and supports human economic activity. Further, humans are creatures that evolved in a diverse natural environment between forest and grasslands. People need to be reassured that such places remain. When people speak of "going to the country," they generally mean more than getting out of town. For reasons of their own sanity and well being, they need a holistic, organic experience. Prolonged exposure to urban monotony produces neuroses, for which cultural and natural diversity cure.

Historically, the lack of attention to biological diversity, and the ecological processes it supports, has resulted in economic hardships for segments of the basin's human population.

The final reason for protecting biological diversity is that species and natural systems are intrinsically valuable. The above reasons have focused on the benefits of the natural world to humans. All things possess intrinsic value simply because they exist.

Biological Resources Concerning the Subject Parcel

As part of the Natural Resources Information Report, staff checks office maps to determine if any nature preserves are within 500 feet of the parcel in question. If there is a nature preserve in the area, then that resource will be identified as part of the report. The SWCD recommends that every effort be made to protect that resource. Such efforts should include, but are not limited to erosion control, sediment control, stormwater management, and groundwater monitoring.

Office maps indicate there are no designated Natural Areas within 500 feet of the parcel.

WOODLANDS

The McHenry County Conservation District's Remnant Oak Woodland Study does not identify any oak woodlands on the parcel.

Native woodlands are no longer a common occurrence throughout much of McHenry County. Although forests originally covered nearly 40% of Illinois, today only about 12% of the state is forested, with most of this being secondary growth (Ill. Natural History Survey Reports, Nov/Dec 1993, No. 324). The composition of Illinois forests has changed markedly over the past three decades. 97% of the timberland is classified as hardwood forest. The forest acreage continues to increase from 4.2 million acres in 1985 to 4.3 million acres in 1998. (IL Forest Development Council News, IL DNR, Winter 2001/Volume 2, No. 1). Oak-hickory forests, which had made up half of the acreage, have declined by 14%, and make up 2.1 million acres. This decline is largely a result of wildfire suppression that allows maples to take over. Thus, the acres of maple-beech forest have risen more than 40-fold from 1962 to 1985, to one quarter of the total forest area, 696 thousand acres. Dutch elm disease and the conversion of forested bottomlands to agriculture have resulted in huge declines in the elm-ash-cottonwood forests, 906 thousand acres, falling from one third - one sixth of the Illinois forest area. Elm accounts for the greatest number of individual trees – 412 million. Other species groups with more than 100 million trees include hickory, red oak, sugar/black maple, ash, hackberry, and black cherry.

Woodlands provide many benefits such as wildlife habitat, erosion control, air and water quality improvements, and aesthetic values. Forests are responsible for much of the biological diversity in the state. Many species are dependent upon forests for food & shelter, including threatened/endangered species.

One of the most serious problems facing Illinois forests is the invasion of exotic plants and animals. Some of the most damaging plants includes European buckthorn, multiflora rose, honeysuckle, purple loosestrife, and garlic mustard.

Many trees, particularly hardwoods (especially oaks) are extremely sensitive to construction-induced disturbances. The area most susceptible to damage is within the "drip radius," the ground surface directly beneath the leafy canopy of the tree. Many trees have an extensive system of feeder roots, located within one foot of the surface, and supply the tree with the majority of its moisture and nutrient needs.

Construction activities can negatively impact trees in several different ways. Earth-moving activities that stockpile soil near trees can suffocate tree roots that, although buried, require oxygen. Vehicle traffic can compact the soil to a point where the roots no longer function effectively. Grading activities for road cuts and foundations can cause a localized drop in the water table, placing the trees under stress. The placement of pavement or stormwater management facilities near established trees can also radically change soil moisture. The removal of the accumulated organic materials normally present on a woodland floor, and the subsequent establishment of turf lawns, can drastically affect the soil temperature and nutrient balance. Injury to the bark of a tree can increase the chance of the tree being subjected to a potentially harmful disease.

If existing trees are to be maintained in a healthy state, the appropriate planning is necessary. Someone with a working knowledge of forestry should assess existing trees to determine which trees should be protected. Some tree species are not considered desirable due to their aggressive growth, behavior, and limited value to local wildlife. Proper management of woodlands and open space includes the selective elimination of such trees and replacement by more desirable species. **Trees that are to be saved should be marked and protected with snow fencing or similar material, installed around the drip radius, to prevent root damage,** and vehicle traffic should be minimized around the drip line. Contractors should be informed of the intention to preserve trees and be expected to conduct their work accordingly.

Tree damage resulting from construction activities may not be apparent for a number of years. While it is recognized that some tree loss

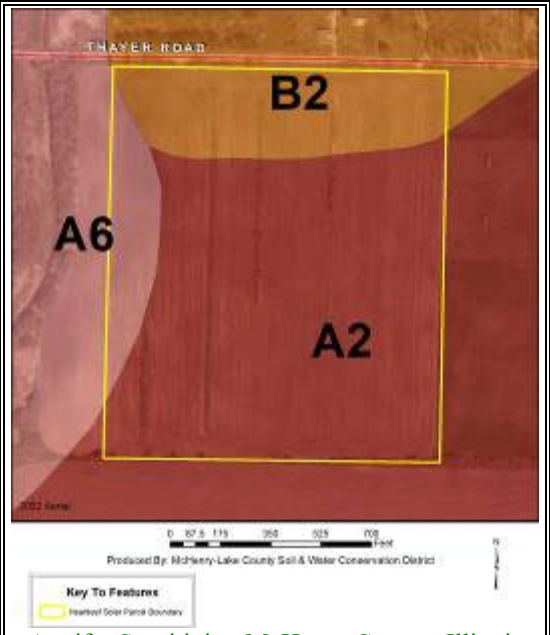
is unavoidable, this should be minimized to the extent possible. It is highly recommended that trees lost to development activity be replaced by younger specimens of the native trees now found on the PIQ.

GEOLOGIC INFORMATION

Geology and the Proposed Land Use

As density of septic systems increases, the concern for pollution potential of local groundwater rises. Local geology plays an important role in determining the pollution potential. Groundwater pollution potential is an important factor when determining a specific area's suitability for a given land use. The local geology, is an important element of the natural resource base. This information, when compared to soils information, gives a clearer picture of conditions on this parcel.

Geological data comes from the Illinois State Geological Survey Circular 559, *Geologic Mapping for Environmental Planning, McHenry County, Illinois.*



Aquifer Sensitivity, McHenry County, Illinois (e.g., septic systems) (Vaiden et al.)

The Geologic features map indicates the parcel is comprised of 26.01 acres of A2, 3.11 acres of A6 and 7.49 acres of B2 geologic limitations.

A-2: Geologic limitations. The potential for contaminating shallow aquifers is high. In these areas, contaminants from any source can move rapidly through these sand and gravel deposits to wells or nearby streams. In addition, this thick surficial aquifer is commonly hydraulically connected to underlying aquifers (Berg 1994). Land-use practices should be very conservative in all areas mapped as unit A. (Curran et al 1997) (Contains less than 20 feet Haeger sandy diamicton overlying Henry sand and gravel greater than 50 feet thick.

A-6: Geologic limitations. The potential for contaminating shallow aquifers is high. In these areas, contaminants from any source can move rapidly through these sand and gravel deposits to wells or nearby streams. In addition, this thick surficial aquifer is commonly hydraulically connected to underlying aquifers (Berg 1994). Land-use practices should be very conservative in all areas mapped as unit A. (Curran et al 1997) (Contains less than 20 feet fine-grained materials overlying greater than 50 feet Henry sand and gravel.)

B-2: Geologic limitations. The potential for contamination is moderately high. Groundwater in these thin sand and gravel deposits is not commonly tapped for water resource; however, contaminated groundwater may flow into aquifers of adjoining units, or it may migrate through the sand and gravel, especially along the contact with underlying fine-grained deposits, and discharge on slopes or into surface-water bodies. (Contains less than 20 feet Henry sandy diamicton overlying less than 20 feet Henry sand and gravel.)

SENSITIVE AQUIFER RECHARGE AREAS

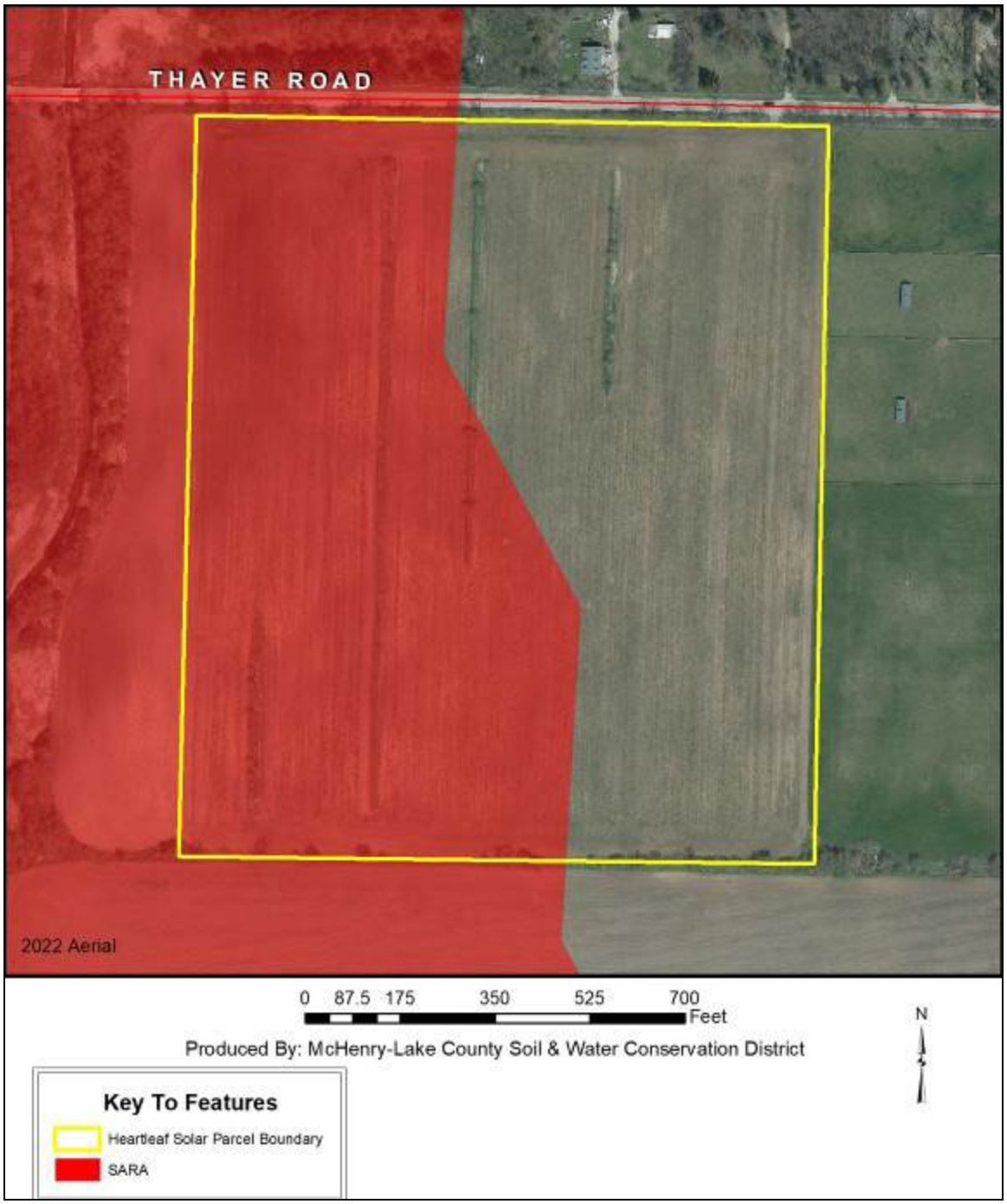
Developed for McHenry County in 2008 and revised in 2018 is the "McHenry County Sensitive Aquifer Recharge Areas" map. Because McHenry County is 100% reliant on groundwater and has been experiencing groundwater quantity/quality issues, the county board in 1995 authorized a groundwater investigation/report titled "County of McHenry Groundwater Resources Management Plan". Many facts in that report startled decision makers. For example, the report found that in 2000, one township was withdrawing groundwater at unsustainable rates and by 2030 if status-quo, three townships would be doing the same and that three other townships would be approaching that un-sustainability. In 2007, the County Board hired a full time Water Resources Manager and authorized the creation of the McHenry County Groundwater Task Force. The Recharge Subcommittee of the Groundwater Task Force was charged with identifying areas within the county that could be considered to have high potential for recharge of shallow groundwater and develop recommendations for protecting those areas in terms of both quantity and quality. The original main basis for the map identifying recharge is areas of high or moderately high potential for aquifer contamination as identified in the Illinois State Geological Survey's Circular 559, "Geologic Mapping for Environmental Planning, McHenry County, IL". In a meeting of the recharge subcommittee, Illinois State Geological Survey and Illinois State Water Survey, it was determined that the areas of high or moderately high potential for aquifer contamination could be qualified by using soil properties. The plan was to remove from the high and moderately high areas those soils with slow permeability, steep slopes and hydric soils that discharge groundwater. Using Table 6 of the Soil Survey of McHenry County a digital layer was developed of soil properties:

- Restricted permeability
- Slopes 4% or greater (except if the soil had excessive permeability, it was not included)

Also digitized were groundwater discharge hydric soils. NRCS Illinois Area 3 Resource Soil Scientists in 2002 developed a hydric soil recharge/flow through/discharge guide to use when designing wetland restoration. Because recharge/flow through/discharge is very complex and changes depending on the year only soils that were thought to be generally only groundwater discharge were used.

Subsequent to the original map development, 3D groundwater modeling has occurred and provided more precise groundwater flow data and thus was the basis for the 2018 map update. *(Information Courtesy of the McHenry County Groundwater Taskforce – Recharge Subcommittee.)*

The map indicates 18.87 acres of the parcel is within a sensitive aquifer recharge area.


THAYER ROAD
2022 Aerial
0 87.5 175 350 525 700
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
SARA

SOILS INFORMATION

Importance of Soils Information

Soils information comes from Natural Resources Conservation Service Soil Maps and Descriptions for McHenry County. This information is important to all parties involved in determining the suitability of the proposed land use change.

Each soil polygon is given a number, which represents its soil type. The letter found after the soil type number indicates the soils slope class.

Each soil map unit has limitations for a variety of land uses such as septic systems, buildings with basements, and buildings without basements. It is important to remember that soils do not function independently of each other. The behavior of a soil depends upon the physical properties of adjacent soil types, the presence of artificial drainage, soil compaction, and its position in the local landscape.

The limitation categories (slight, moderate or severe) indicate the potential for difficulty in using that soil unit for the proposed activity and, thus, the degree of need for thorough soil borings and engineering studies. A limitation does not necessarily mean that the proposed activity cannot be done on that soil type. It does mean that the reasons for the limitation need to be thoroughly understood and dealt with in order to complete the proposed activity successfully. A severe limitation indicates that the proposed activity will be more difficult and costly to do on that soil type than on a soil type with a moderate or slight rating.

Soil survey interpretations are predictions of soil behavior for specified land uses and specified management practices. They are based on the soil properties that directly influence the specified use of the soil. Soil survey interpretations allow users of soil surveys to plan reasonable alternatives for the use and management of soils.

Soil interpretations do not eliminate the need for on-site study and testing of specific sites for the design and construction for specific uses. They can be used as a guide for planning more detailed investigations and for avoiding undesirable sites for an intended use. The scale of the maps and the range of error limit the use of the soil delineations.


Soil Map—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
40
80
160
240
Feet
0
100
200
400
600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Map Unit Symbol	Map Unit Name	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded	15.2	41.4%
Totals		**36.6**	**100.0%**

Soil Interpretations Explanation

Nonagricultural

General

These interpretative ratings help engineers, planners, and others to understand how soil properties influence behavior when used for nonagricultural uses such as building site development or construction materials. This report gives ratings for proposed uses in terms of limitations and restrictive features. The tables list only the most restrictive features. Other features may need treatment to overcome soil limitations for a specific purpose.

Ratings come from the soil's "natural" state, that is, no unusual modification occurs other than that which is considered normal practice for the rated use. Even though soils may have limitations, an engineer may alter soil features or adjust building plans for a structure to compensate for most degrees of limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs for site preparation and maintenance.

Soil properties influence development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Soil limitation ratings of slight, moderate, and severe are given for the types of proposed improvements that are listed or inferred by the petitioner as entered on the report application and/or zoning petition. The most common types of building limitation that this report gives limitations ratings for is: septic systems. It is understood that engineering practices can overcome most limitations for buildings with and without basements, and small commercial buildings. Limitation ratings for these types of buildings are not commonly provided. Organic soils, when present on the parcel, are referenced in the hydric soils section of the report. This type of soil is considered to be unsuitable for all types of construction.

Limitations Ratings

1. ***Slight*** - This soil has favorable properties for the use. The degree of limitation is minor. The people involved can expect good performance and low maintenance.
2. ***Moderate*** - This soil has moderately favorable properties for the use. Special planning, design, or maintenance can overcome this degree of limitation. During some part of the year, the expected performance is less desirable than for soils rated slight.
3. ***Severe or Very Severe***- This soil has one or more properties that are unfavorable for the rated use. These may include the following: steep slopes, bedrock near the surface, flooding, high shrink-swell potential, a seasonal high water table, or low strength. This degree of limitation generally requires major soil reclamation, special design, or intensive maintenance, which in most situations is difficult and costly.

SOIL LEACHABILITY

This interpretation is designed to evaluate the potential for nitrate-nitrogen to be transmitted through the soil profile below the root zone by percolating water under nonirrigated conditions. Leaching nitrates have the potential to contaminate shallow and deep aquifers used for drinking water. The ratings are based on inherent soil and climate properties that affect nitrate leaching and do not account for management practices, such as crop rotation and rates and timing of nitrogen fertilizer applications.

The following soil and climate factors are used in the interpretation criteria:

1. Mean annual precipitation minus potential evapotranspiration - This factor provides an estimate of the amount of water that is available to move through the soil profile on an annual basis. Potential evaporation is estimated from mean annual air temperature using an algorithm (developed by the National Soil Survey Center) that employs the Hamon potential evapotranspiration method.

2. Water travel time through the entire soil profile - This factor uses the saturated hydraulic conductivity (Ksat) and thickness of each soil horizon to estimate the number of hours that would be required for a given volume of water to move through the entire soil profile. One advantage of this method for estimating the rate of water movement is that the properties and thickness of each soil horizon are accounted for instead of using an average saturated hydraulic conductivity for the entire profile. This method accounts for subtle differences between soils in texture, structure, horizon thickness, and depth to water-restricting layers.

3. Available water capacity - This factor accounts for the cumulative amount of water available to plants that the entire soil profile can hold at field capacity to a depth of 150 cm. The more water the soil profile can hold, the less water is available for deep leaching.

4. Depth to and duration of a water table - This factor uses a water table index based on the minimum average depth to a water table and the number of months that the water table is present during the period from April through October. The factor is used to account for the loss of nitrates to the atmosphere as nitrous oxide or nitrogen gas due to denitrification under anaerobic conditions caused by water saturation. The higher the water table and the longer its duration, the larger the quantity of nitrates that would potentially be lost to the atmosphere and therefore would not be available for deep leaching.

5. Slope gradient adjusted for hydrologic soil group - The steeper the slope gradient, the higher the potential for surface runoff and the lower the amount of water available to move through the soil profile. The following adjustments are made to the slope gradient by hydrologic group to account for differences in potential for surface runoff:

Hydrologic group A-slope % x 0.75

Hydrologic group B-slope % x 0.85

Hydrologic group C-slope % x 0.95

Hydrologic group D-no adjustment

The ratings are both verbal and numerical. The ratings for Nitrate Leaching Potential, Nonirrigated Areas, are calculated as follows:

- The Mean Annual Precipitation minus Potential Evapotranspiration subrule is weighted by multiplying by 0.60.
- The Water Travel Time subrule is weighted by multiplying by 0.25.
- The Available Water Capacity subrule is weighted by multiplying by 0.15.
- The sum of these three weighted subrules results in a value between 0.00 and 1.00.
- Adjustments are then made for water table depth and duration and for slope gradient adjusted for hydrologic group. The sum of the values from these subrules is subtracted from the sum in step 4 above. The maximum reduction is 0.50 for the water table index subrule and 0.30 for the slope gradient subrule.

The following rating classes for Nitrate Leaching Potential, Nonirrigated Areas, are assigned based on the final calculation from the factors above:

Low: 0.00 to 0.25

Moderate: 0.26 to 0.50

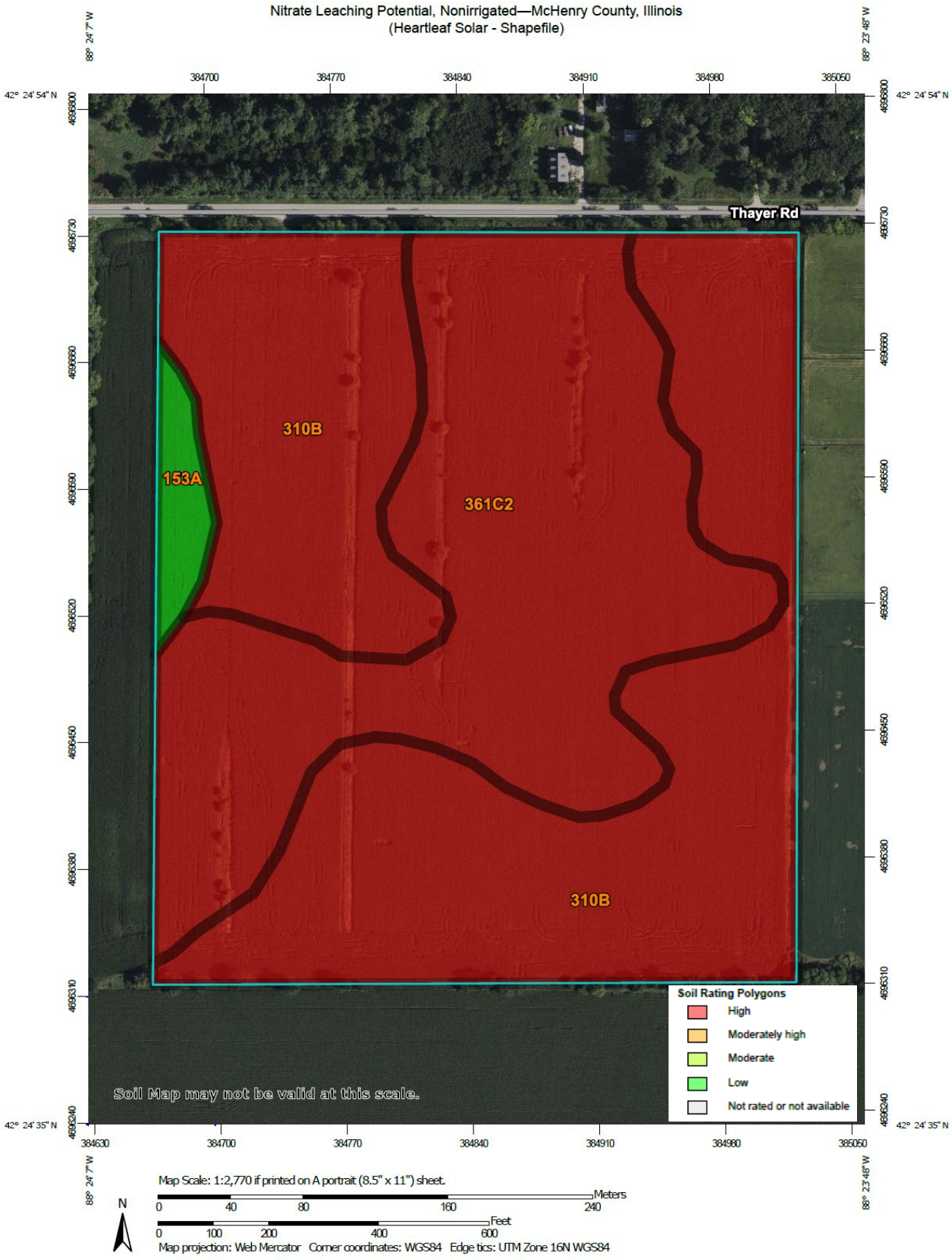
Moderately high: 0.51 to 0.75

High: 0.76 to 1.00

The ratings indicate the potential for nitrate leaching below the root zone, based on inherent soil and climate properties. A "low" rating indicates a low potential for leaching of nitrates below the root zone. A "high" rating indicates a high potential for leaching of nitrates below the root zone. The "moderate" and "moderately high" ratings indicate intermediate potential.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.


Nitrate Leaching Potential, Nonirrigated—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Rating Polygons
High
Moderately high
Moderate
Low
Not rated or not available
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
Meters
0
40
80
160
240
Feet
0
100
200
400
600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Nitrate Leaching Potential, Nonirrigated

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	Low	Pella, cool (85%)	Water quantity available for leaching (0.99)	0.9	2.5%
				Denitrification due to saturation (0.50)		
310B	McHenry silt loam, 2 to 4 percent slopes	High	McHenry (90%)	Water quantity available for leaching (1.00)	20.5	56.1%
				Water travel time (0.92)		
				Water holding capacity (0.18)		
			Kidder (5%)	Water quantity available for leaching (1.00)		
				Water travel time (0.95)		
				Water holding capacity (0.39)		
361C2	Kidder loam, 4 to 6 percent slopes, eroded	High	Kidder, eroded (95%)	Water quantity available for leaching (1.00)	15.2	41.4%
				Water travel time (0.95)		
				Water holding capacity (0.43)		
			Fox (3%)	Water quantity available for leaching (1.00)		
				Water travel time (0.76)		
				Water holding capacity (0.67)		

Rating	Acres	Percent
High	35.7	97.5%
Low	0.9	2.5%

SOIL PERMEABILITY

Soil permeability is the quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality.

For the purposed of the NRI Report, those soils which have “rapid” to “very rapid” permeability, have been identified as “highly permeable.”

Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow ..... 0.0 to 0.01 inch
Very slow ..... 0.01 to 0.06 inch
Slow ..... 0.06 to 0.2 inch
Moderately slow ..... 0.2 to 0.6 inch
Moderate ..... 0.6 inch to 2.0 inches
Moderately rapid ..... 2.0 to 6.0 inches
Rapid ..... 6.0 to 20 inches
Very rapid ..... more than 20 inches

Highly Permeable Soils

Map Unit Symbol	Highly Permeable	Acres	Percent
153A	No	0.9	2.5%
310B	No	20.5	56.1%
361C2	No	15.2	41.4%
Total Highly Permeable		**0.0**	**0.0%**

SOIL EROSION & SEDIMENT CONTROL

Erosion is the wearing away of the soil by water, wind, and other forces. Soil erosion threatens the Nation's soil productivity and contributes the most pollutants in our waterways. Water causes about two thirds of erosion on agricultural land. Four properties, mainly, determine a soil's erodibility:

1. Texture 2. Slope 3. Structure
4. Organic matter content

Slope has the most influence on soil erosion potential when the site is under construction. Erosivity and runoff increase as slope grade increases. The runoff then exerts more force on the particles, breaking their bonds more readily and carrying them farther before deposition. The longer water flows along a slope before reaching a major waterway, the greater the potential for erosion.

Soil erosion during and after this proposed construction can be a primary non-point source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, decrease the storage capacity of lakes, clog streams and drainage channels, cause deterioration of aquatic habitats, and increase water treatment costs. Soil erosion also increases the risk of flooding by choking culverts, ditches and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

The general principles of erosion and sedimentation control measures include:

- reducing or diverting flow from exposed areas, storing flows or limiting runoff from exposed areas,
- staging construction in order to keep disturbed areas to a minimum,
- establishing or maintaining or temporary or permanent groundcover,
- retaining sediment on site and
- properly installing, inspecting and maintaining control measures.

Erosion control practices are useful controls only if they are properly located, installed, inspected and maintained.

The SWCD recommends an erosion control plan for all building sites, especially if there is a wetland or stream nearby.

Highly Erodible Soils (HEL)

Map Unit Symbol	HEL	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes – No	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes – No	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded - Yes	15.2	41.4%
Total Highly Erodible Soils		**15.2**	**41.4%**

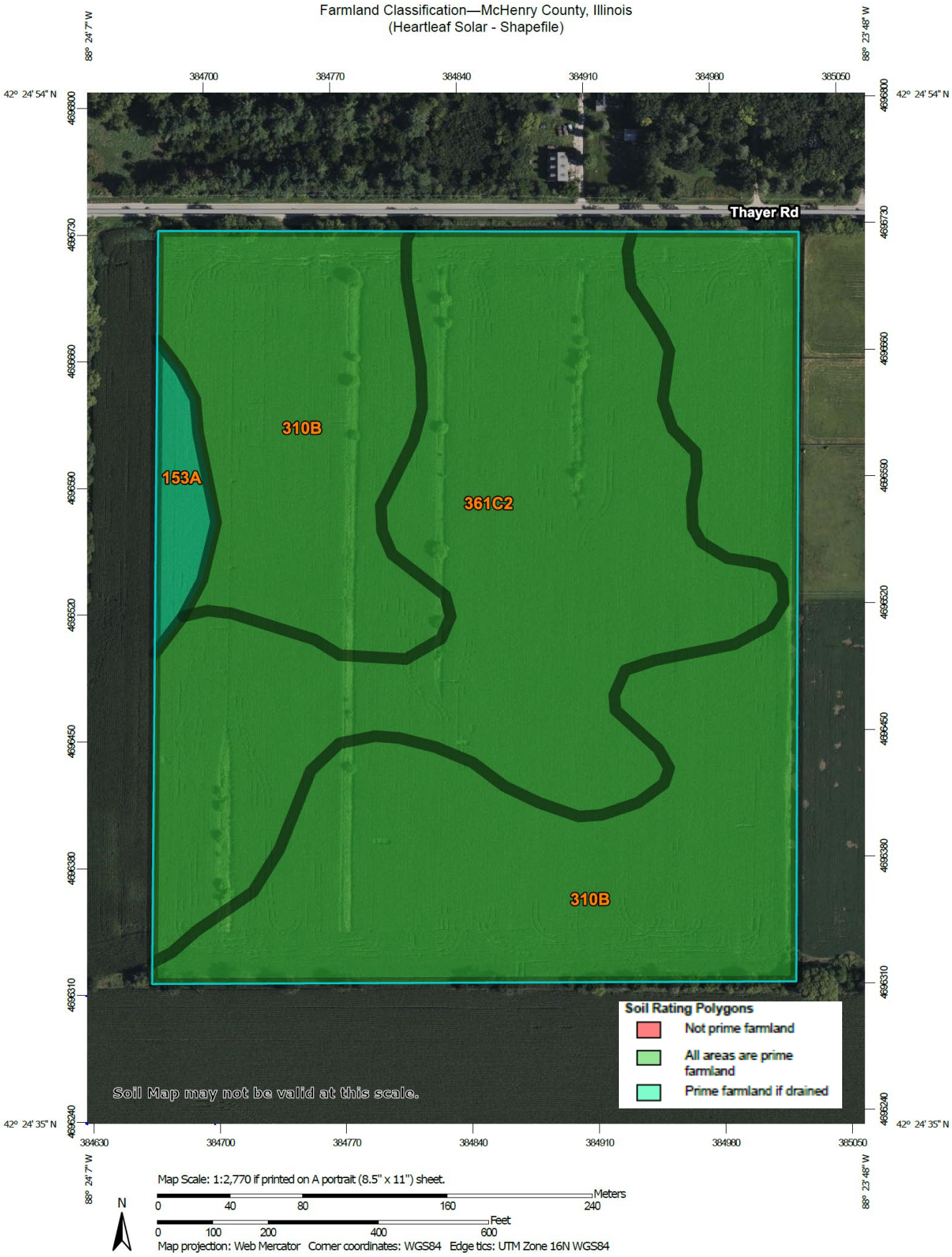
PRIME FARMLAND SOILS

Prime farmland soils are an important resource to McHenry County. Some of the most productive soils in the United States occur locally. Each soil map unit in the United States is assigned a prime or non-prime rating. Prime agricultural land does not need to be in the production of food & fiber.

Section 310 of the NRCS general manual states that urban or built-up land on prime farmland soils is not prime farmland. The percentages of soils map units on the parcel reflect the determination that urban or built up land on prime farmland soils is not prime farmland.

Prime Farmland Soils

Map unit symbol	Map unit name	Rating	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	Prime farmland if drained	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes	All areas are prime farmland	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded	All areas are prime farmland	15.2	41.4%
Total Prime Farmland			**35.7**	**97.5%**
Total Prime Farmland if Drained			**0.9**	**2.5%**


Farmland Classification—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Rating Polygons
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
Meters
0
40
80
160
240
Feet
0
100
200
400
600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

GROUND-BASED SOLAR ARRAYS, SOIL-PENETRATING ANCHOR SYSTEMS

Description

Ground-based solar arrays are sets of photovoltaic panels that are not situated on a building or pole. These installations consist of a racking system that holds the panel in the desired orientation and the foundation structures that hold the racking system to the ground. Two basic methods are used to hold the systems to the ground, based on site conditions and cost. One method employs driven piles, screw augers, or concrete piers that penetrate into the soil to provide a stable foundation. The ease of installation and general site suitability of soil-penetrating anchoring systems depends on soil characteristics such as rock fragment content, soil depth, soil strength, soil corrosivity, shrink-swell tendencies, and drainage. The other basic anchoring system utilizes precast ballasted footings or ballasted trays on the soil surface to make the arrays too heavy to move. The site considerations that impact both basic systems are slope, slope aspect, wind speed, land surface shape, flooding, and ponding. Other factors that will contribute to the function of a solar power array include daily hours of sunlight and shading from hills, trees or buildings.

Soil-penetrating anchoring systems can be used where the soil conditions are not limited. Installation of these systems requires some power equipment for hauling components and either driving piles, turning helices, or boring holes to install the anchoring apparatus.
Soils can be a non-member, partial member or complete members of the set of soils that are limited for "Ground-based Solar Panel Arrays". If a soil's property within 150 cm (60 inches) of the soil surface has a membership indices greater than zero, then that soil property is limiting and the soil restrictive feature is identified. The overall interpretive rating assigned is the maximum membership indices of each soil interpretive property that comprise the "Ground-based Solar Panel Array" interpretive rule. Minor restrictive soil features are identified but not considered as part of the overall rating process. These restrictive features could be important factors where the major restrictive features are overcome through design application.

Soils are placed into interpretive rating classes per their rating indices. These are not limited (rating index = 0), somewhat limited (rating index greater than 0 and less than 1.0), or very limited (rating index = 1.0).

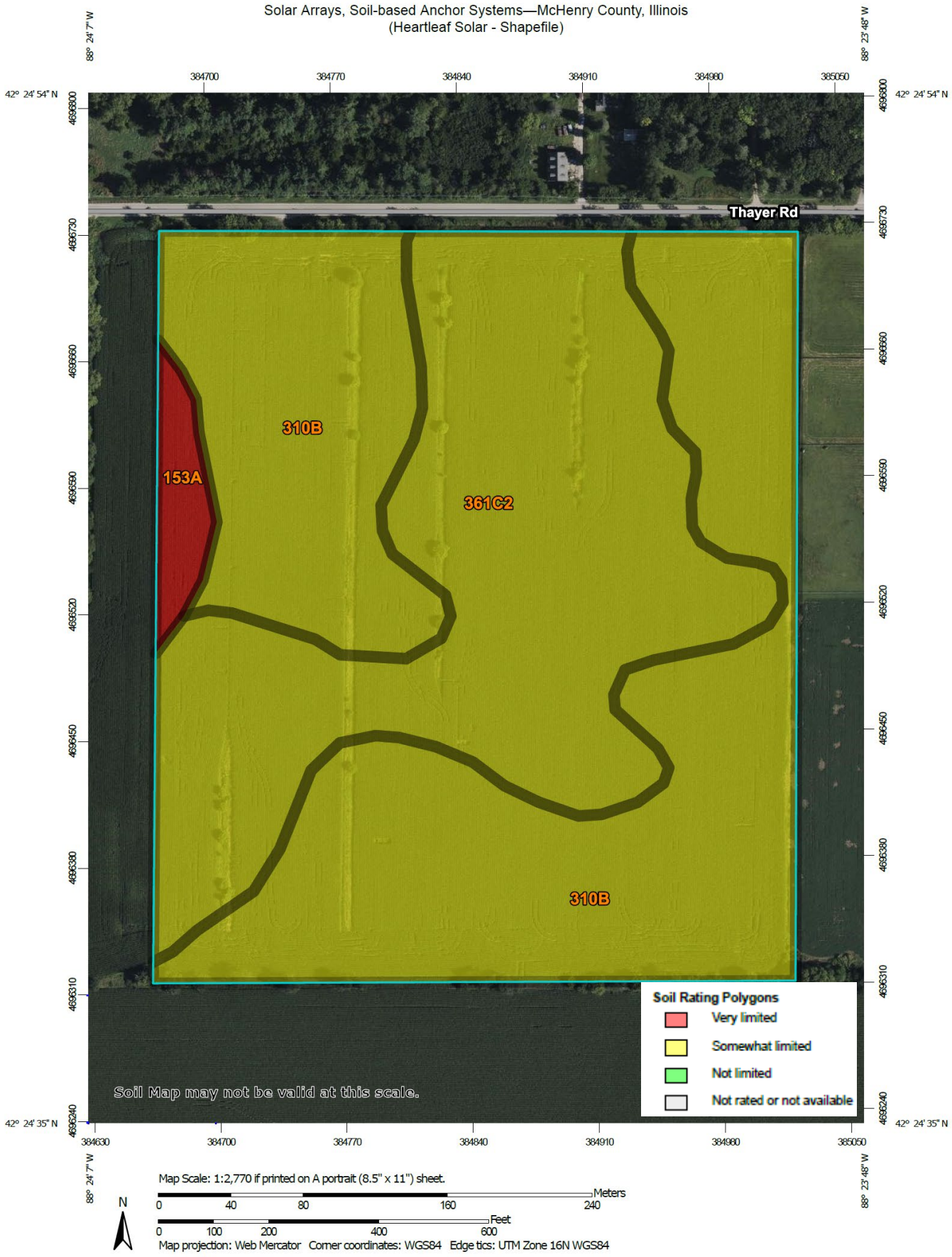
Numerical ratings indicate the degree of limitation. The ratings are shown in decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil has the least similarity to a good site (1.00) and the point at which the soil feature is very much like known good sites (0).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

References:
Canada, S. 2012. Corrosion impacts on steel piles. Solarpro. Solarprofessional.com.

Romanoff, Melvin. 1962. Corrosion of Steel Pilings in Soils. Journal of Research of the National Bureau of Standards. (Volume 66C, No. 3). July/September, 1962.


Solar Arrays, Soil-based Anchor Systems—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Rating Polygons
Very limited
Somewhat limited
Not limited
Not rated or not available
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
40
80
160
240
Feet
0
100
200
400
600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Solar Arrays, Soil-based Anchor Systems

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	Very limited	Pella, cool (85%)	Ponding (1.00)	0.9	2.5%
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Slope shape across (0.30)		
310B	McHenry silt loam, 2 to 4 percent slopes	Somewhat limited	McHenry (90%)	Frost action (0.50)	20.5	56.1%
				Slope shape across (0.20)		
				Low strength (0.14)		
				Hillslope position (0.13)		
			Kidder (5%)	Frost action (0.50)		
				Slope shape across (0.20)		
				Hillslope position (0.13)		
361C2	Kidder loam, 4 to 6 percent slopes, eroded	Somewhat limited	Kidder, eroded (95%)	Frost action (0.50)	15.2	41.4%
				Slope shape across (0.20)		
				Hillslope position (0.13)		
			Fox (3%)	Steel corrosion (0.75)		
				Frost action (0.50)		
				Slope shape across (0.20)		
				Hillslope position (0.13)		

Rating	Acres	Percent
Somewhat limited	35.7	97.5%
Very limited	0.9	2.5%

AGRICULTURAL AREAS

The Agricultural Areas Conservation and Protect Act became effective July 1, 1980. The purpose of the Act is to provide a means by which agricultural land may be protected and enhanced as a viable segment of the State's economy and as an economic and environmental resource of major importance. Established Ag Areas tend to influence adjacent and surrounding land use changes since they are voluntary in nature and petitioned before the County Board for approval. Ag Areas are considered a high commitment to agriculture. Designated Ag Areas limit land utilization to specified agricultural uses within their designated boundaries. Ag Areas allow landowners limited benefits such as immunity form locally enacted ordinances, which would limit farming operations and immunity from special tax assessments from local units of government.

Office Maps indicate there are no State designated agricultural areas on or adjacent to the parcel.

LAND EVALUATION & SITE ASSESSMENT (LESA)

The Land Evaluation and Site Assessment system is a tool designed to evaluate the viability of agricultural lands where changes in land-use are proposed. LESA was developed as a decision-making tool used by the Zoning Board of Appeals, City Councils or County Boards to help make unbiased decisions of proper land-use. The LESA system was developed by the USDA-NRCS and takes into consideration local conditions such as physical characteristics of the land, compatibility of surrounding land-uses, urban growth factors, and land-use policies determined by local government. LESA was designed to be used in conjunction with the county's land-use plan, zoning ordinances, and other policies being used to decide land-use changes.

Decision makers use the Land Evaluation and Site Assessment (LESA) System to determine the suitability of a land use change and/or a zoning request as it relates to agricultural land. The LESA System is a two step procedure that includes:

- Land Evaluation (LE), soils value
- Site Assessment (SA), land use

Land Evaluation (**LE**) encompasses information regarding soils found on the site and their suitability for agricultural purposes. McHenry County soils consist of 73 different soil series ranging from gravely loams to wet muck soils and from highly productive agricultural soils to high quality gravel deposits. For purposes of the Land Evaluation portion of the LESA system, each soil is assigned a relative value number, from 0 to 100, a 0 being the worst soils for crop production, 100 the best. Parcels containing higher percentages of higher valued soils will rate higher on the overall LESA score while those containing higher percentages lowered value soils will rate lower in the overall LESA score. McHenry County SWCD provides a weighted average of the soils using a simple, mechanical, unbiased method of determining agricultural suitability of soils on site.

Site Assessment (**SA**) identifies and weighs 10 criteria, other than soils information, that contributes to the quality of a site for agricultural uses. The determination to include the specific site assessment factors directly resulted from the following:

- McHenry County Zoning Ordinance,
- 2030 Land Use Plan,
- Other adopted county policies.

In summary, the LESA evaluation addresses all factors, including soils information, together to provide a rational, consistent, and unbiased determination of the impact to agriculture from the proposed land use and zoning changes.

LAND EVALUATION (LE) WORKSHEET

Map Unit Symbol	LE Score	Acres	Percent	Weighted Ave.
153A	94	0.9	2.5%	2.35
310B	79	20.5	56.1%	44.32
361C2	67	15.2	41.4%	27.74
Land Evaluation Score		**36.6**	**100.0%**	**74.4**

Explanation of the LE Worksheet:

Symbol: is the soil type of the polygon on the soils map.
Percentage and Acreage: the percentages of the parcel, and the area that the soil polygon represents.
LE Score: the numeric value from 0 - 100 that is assigned that soil unit
Weighted Ave: The acreage multiplied by the value of that soil unit.

DRAINAGE, RUNOFF AND FLOOD INFORMATION

U.S.G.S Topographic maps give information on elevations, which are important mostly to determine slopes, drainage directions, and watershed information.

Elevations determine the area of impact of floods of record. Slope information determines steepness and erosion potential. Drainage directions determine where water leaves the PIQ, possibly impacting surrounding natural resources.

Watershed information is given for changing land use to a subdivision type of development on parcels greater than 10 acres.

What is a watershed?

Simply stated, a watershed is the area of land that contributes water to a certain point. The point that we use on these reports is usually the point where water exits the parcel. The point is marked with a "○." The watershed boundary is drawn in using the following marking: (— • • —). Often times, water will flow off the parcel in two or more directions. In that case, there is a watershed break on the parcel. (— • • —), and there are two or more watersheds on the parcel.

The watershed boundary is important because the area of land in the watershed can now be calculated using an irregular shape area calculator such as a dot counter or planimiter.

Using regional storm event information, and site specific soils and land use information, the peak stormwater flow through the point marked "○" for a specified storm event can be calculated. This value is called a "Q" value (for the given storm event), and is measured in cubic feet per second (CFS).

When construction occurs, the Q value naturally increases because of the increase in impermeable surfaces. This process decreases the ability of soils to accept and temporarily hold water. Therefore, more water runs off and increases the Q value.

Theoretically, if each development, no matter how large or small, maintains their preconstruction Q value after construction by the installation of stormwater management systems, the streams and wetlands and lakes will not suffer damage from excessive urban stormwater.

For this reason, the McHenry County SWCD recommends that the developer for intense uses such as a subdivision calculate the preconstruction Q value for the exit point(s). A stormwater management system should be designed, installed, and maintained to limit the postconstruction Q value to be at or below the preconstruction value.

Importance of Flood Information

A floodplain is defined as land adjoining a watercourse (riverine) or an inland depression (non-riverine) that is subject to periodic inundation by high water. Floodplains are important areas demanding protection since they have water storage and conveyance functions which affect upstream and down stream flows, water quality and quantity, and suitability of the land for human activity. Since floodplains play distinct and vital roles in the hydrologic cycle, development that interferes with their hydrologic and biologic functions should be carefully considered.

Flooding is both dangerous to people and destructive to their properties. The following maps, when combined with wetland and topographic information, can help developers and future homeowners to "sidestep" potential flooding or ponding problems.

FIRM is the acronym for the Flood Insurance Rate Map, produced by the Federal Emergency Management Agency. These maps define flood elevation adjacent to tributaries and major bodies of water, and superimpose that onto a simplified USGS topographic map. The scale of the FIRM maps is generally dependent on the size and density of parcels in that area. (This is to correctly determine the parcel location and flood plain location.) The FIRM map has three (3) zones. A is the zone of 100 year flood, zone B is the 100 to 500 year flood, and zone C is outside the flood plain.

The Hydrologic Atlas (H.A.) Series of the Flood of Record Map is also used for the topographic information. This map is different from the FIRM map mainly because it will show isolated, or pocketed flooded areas. McHenry County uses both these maps in conjunction with each other for flooded area determinations. The Flood of Record maps, show the areas of flood for various years. Both of these maps stress that the recurrence of flooding is merely statistical. That is to say a 100-year flood may occur twice in one year, or twice in one week, for that matter.

It should be noted that greater floods than those shown on the two maps are possible. The flood boundaries indicated provide a historic record only until the map publication date. Additionally, these flood boundaries are a function of the watershed conditions existing when the maps were produced. Cumulative changes in runoff characteristics caused by urbanization can result in an increase in flood height of future flood episodes.

Floodplains play a vital role in reducing the flood damage potential associated with an urbanizing area and, when left in an undisturbed state, also provide valuable wildlife habitat benefits. If it is the petitioner's intent to conduct floodplain filling or modification activities, the petitioner and the Unit of Government responsible need to consider the potentially adverse effects this type of action could have on adjacent properties. The change or loss of natural floodplain storage often increases the frequency and severity of flooding on adjacent property.

If the available maps indicate the presence of a floodplain on the PIQ, the petitioner should contact the IDOT-DWR and FEMA to delineate a floodplain elevation for the parcel. If a portion of the property is indeed floodplain, applicable state, county and local regulations will need to be reflected in the site plans.

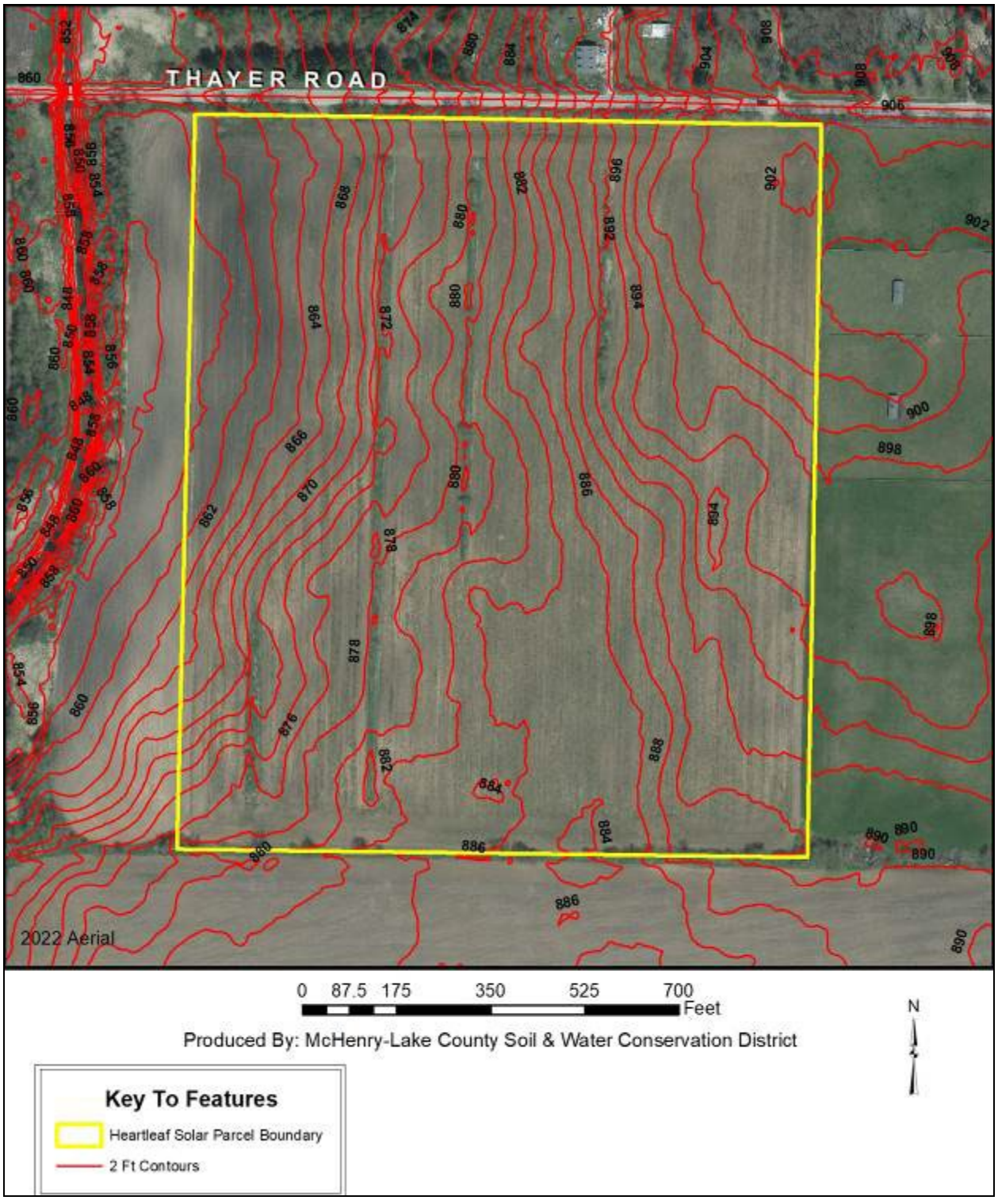
Another indication of flooding potential can be found in the soils information. Hydric soils indicate the presence of drainageways, areas subject to ponding, or a naturally occurring high water table. These need to be considered along with the floodplain information when developing the site plan and the stormwater management plan. If the site does include these hydric soils and development occurs, thus raising the concerns of the loss of water storage in these soils and the potential for increased flooding in the area.

Flood of Record Map Showing Topographic Information

This parcel is located on sloping topography (slopes 0 to 6%) involving high and low areas (elevation ranges from 858' above sea level to 902' above sea level).

During construction, temporary vegetation can decrease erosion on the slopes if the area is to be mass graded.

Also, the flood of record for this area indicates the parcel has not previously flooded.


THAYER ROAD
2022 Aerial
0 87.5 175 350 525 700
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
2 Ft Contours

Federal Emergency Management Agency: Flood Insurance Rate Map Panel 17111C0070J

The map indicates the parcel is outside of the 100-year floodplain.

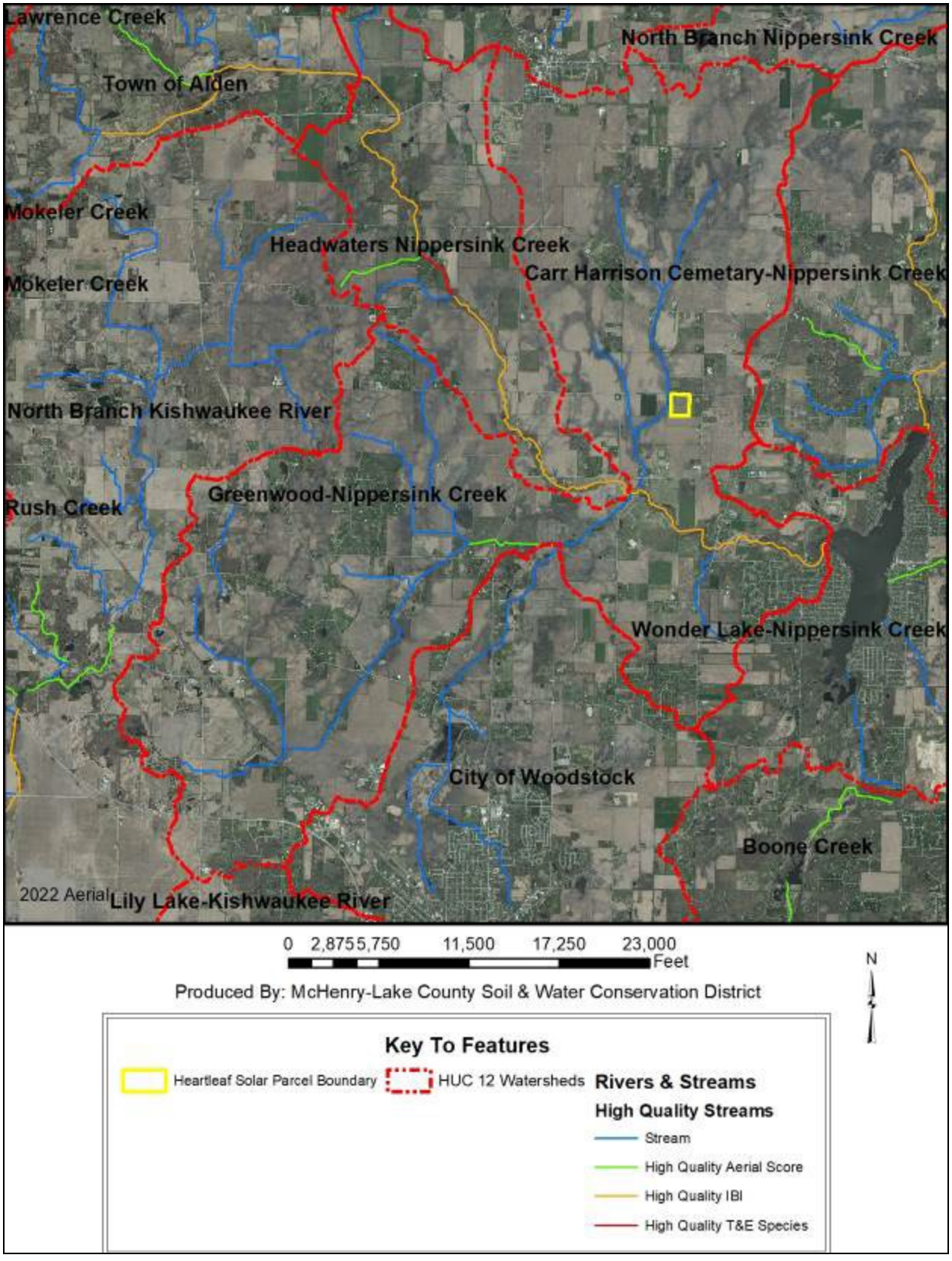
WATERSHED PLANS

Watershed and Subwatershed Information

A watershed is the area of land that drains into a specific point including a stream, lake or other body of water. High points on the Earth's surface, such as hills and ridges define watersheds. When rain falls in the watershed, it flows across the ground towards a stream or lake. Rainwater carries any pollutants it comes in contact with such as oils, pesticides, and soil. Everyone lives in a watershed. Their actions can impact natural resources and people living downstream. Residents can minimize this impact by being aware of their environment and implications of their activities, implementing practices recommended in watershed plans and educating others about their watershed.

The parcel is located within the Greenwood Subwatershed (HUC 12 – 071200060905) of the Nippersink Creek Watershed. The Nippersink Creek Watershed comprises 97,551.80 acres of McHenry County. In 2008 the Nippersink Creek Watershed Committee updated their Watershed Plan (originally developed in 1998) which outlines general watershed management objectives and subwatershed site specific objectives. According to the report, "Without questions, the biggest threat to the health and sustainability of the Nippersink Watershed is the rapid development of agricultural land into suburban land uses. This change in land use continues to be performed using land development methods which do not preserve the interception, infiltration, storage, and slow release of accumulated rainfall to the underlying shallow aquifers and adjacent wetlands and streams." Future impacts and impairments include: degraded water quality from development, additional channel hydromodification, loss of natural wetlands and stream corridor, and reduced groundwater recharge. Their watershed plan can be accessed on their website: http://nippersink.org/plan.htm.

The Subwatershed Plan for the Headwaters of Nippersink Creek, does not identify any site specific recommendations for this parcel. Therefore, the general Nippersink Watershed Objectives should be considered in planning this development. Implementation strategies for the objectives are described in further detail within their report.


Lawrence Creek
North Branch Nippersink Creek
Town of Alden
Mokeler Creek
Headwaters Nippersink Creek
Carr Harrison Cemetary-Nippersink Creek
Mokeler Creek
North Branch Kishwaukee River
Greenwood-Nippersink Creek
Rush Creek
Wonder Lake-Nippersink Creek
City of Woodstock
Boone Creek
2022 Aerial
Lily Lake-Kishwaukee River
0 2,8755,750 11,500 17,250 23,000
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
HUC 12 Watersheds
Rivers & Streams
High Quality Streams
Stream
High Quality Aerial Score
High Quality IBI
High Quality T&E Species

WETLAND INFORMATION

Importance of Wetland Information

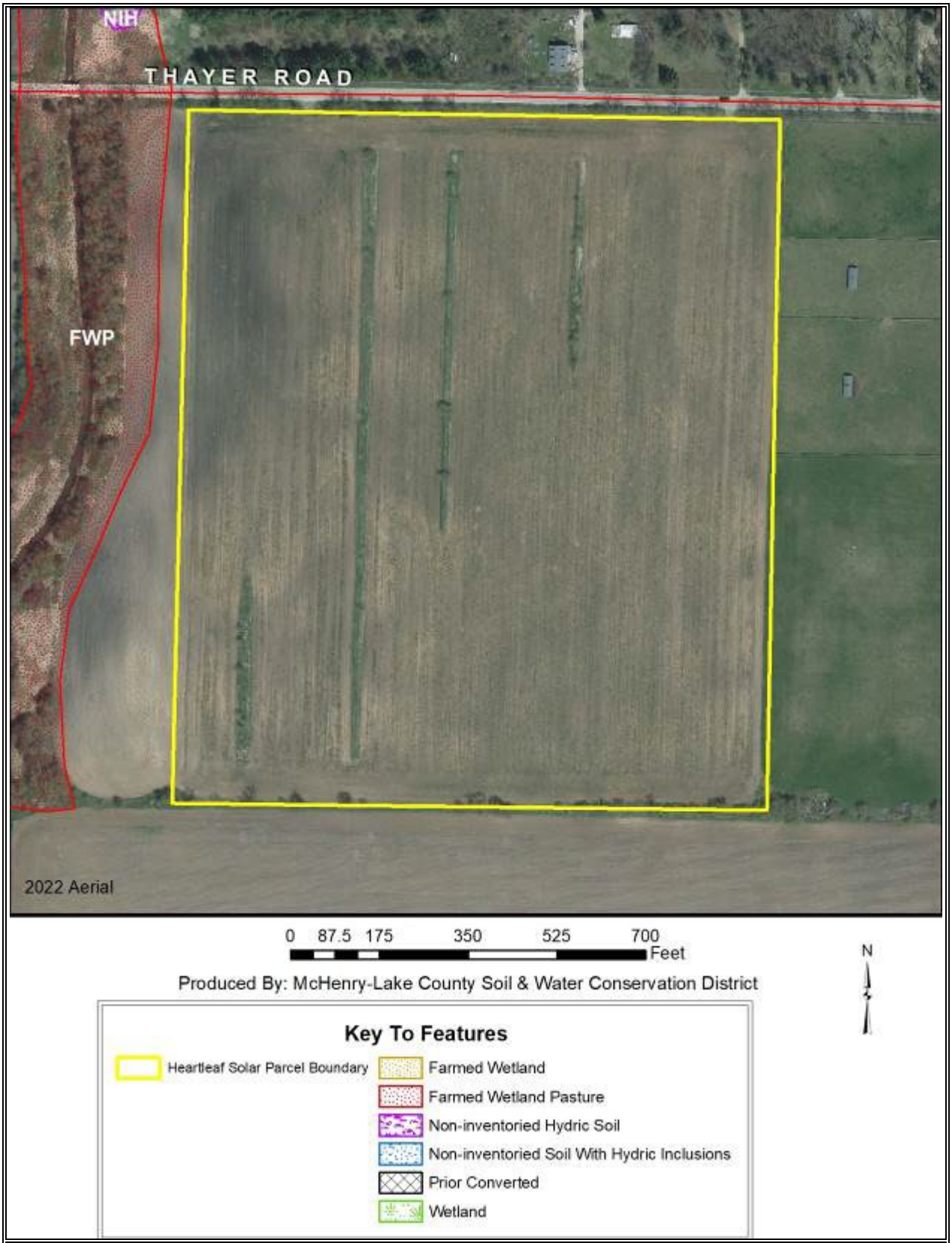
Wetlands function in many ways to provide numerous benefits to society. They control flooding by offering a slow release of excess water downstream or through the soil. They cleanse water by filtering out sediment and some pollutants, and can function as rechargers of our valuable groundwater. They also are essential breeding, rearing, and feeding grounds for many species of wildlife.

These benefits are particularly valuable in urbanizing areas as development activity typically adversely affects water quality, increases the volume of stormwater runoff, and increases the demand for groundwater. In an area where many individual homes rely on shallow groundwater wells for domestic water supplies, activities that threaten potential groundwater recharge areas are contrary to the public good. The conversion of wetlands, with their sediment trapping and nutrient absorbing vegetation, to biologically barren stormwater detention ponds can cause additional degradation of water quality in downstream or adjacent areas.

It has been estimated that over 95% of the wetlands that were historically present in Illinois have been destroyed while only recently has the true environmental significance of wetlands been fully recognized. America is losing 100,000 acres of wetland a year, and has saved 5 million acres total (since 1934). One acre of wetland can filter 7.3 million gallons of water a year. These are reasons why our wetlands are high quality and important.

This section contains the NRCS (Natural Resources Conservation Service) Wetlands Inventory, which is the most comprehensive inventory to date. The NRCS Wetlands Inventory is reproduced from an aerial photo at a scale of 1" equals 660 feet. The NRCS developed these maps in cooperation with U.S. EPA (Environmental Protection Agency,) and the U.S. Fish and Wildlife Service, using the National Food Security Act Manual, 3rd Edition. The main purpose of these maps is to determine wetland areas on agricultural fields and areas that may be wetlands but are in a non-agriculture setting.

The NRCS Wetlands Inventory in no way gives an exact delineation of the wetlands, but merely an outline, or the determination that there is a wetland within the outline. For the final, most accurate wetland **determination** of a specific wetland, a wetland ***delineation*** must be certified by NRCS staff using the National Food Security Act Manual (on agricultural land.) On urban land, a certified wetland delineator must perform the delineation using the ACOE 1987 Manual. *See the glossary section for the definitions of "delineation" and "determination."*



Natural Resources Conservation Service: Wetland Inventory Map.

The map indicates there are no wetlands on the parcel.

ADID (ADVANCED IDENTIFICATION OF AQUATIC RESOURCES)

Wetlands are some of the most productive and diverse ecological systems on Earth. The unique characteristics of plants, soils, and water distinguish these systems. Marshes, wet meadows, fens and bogs are some of the common wetland types found within McHenry County. There are also various streams scattered throughout the county, including several that rank among the highest quality in Illinois.

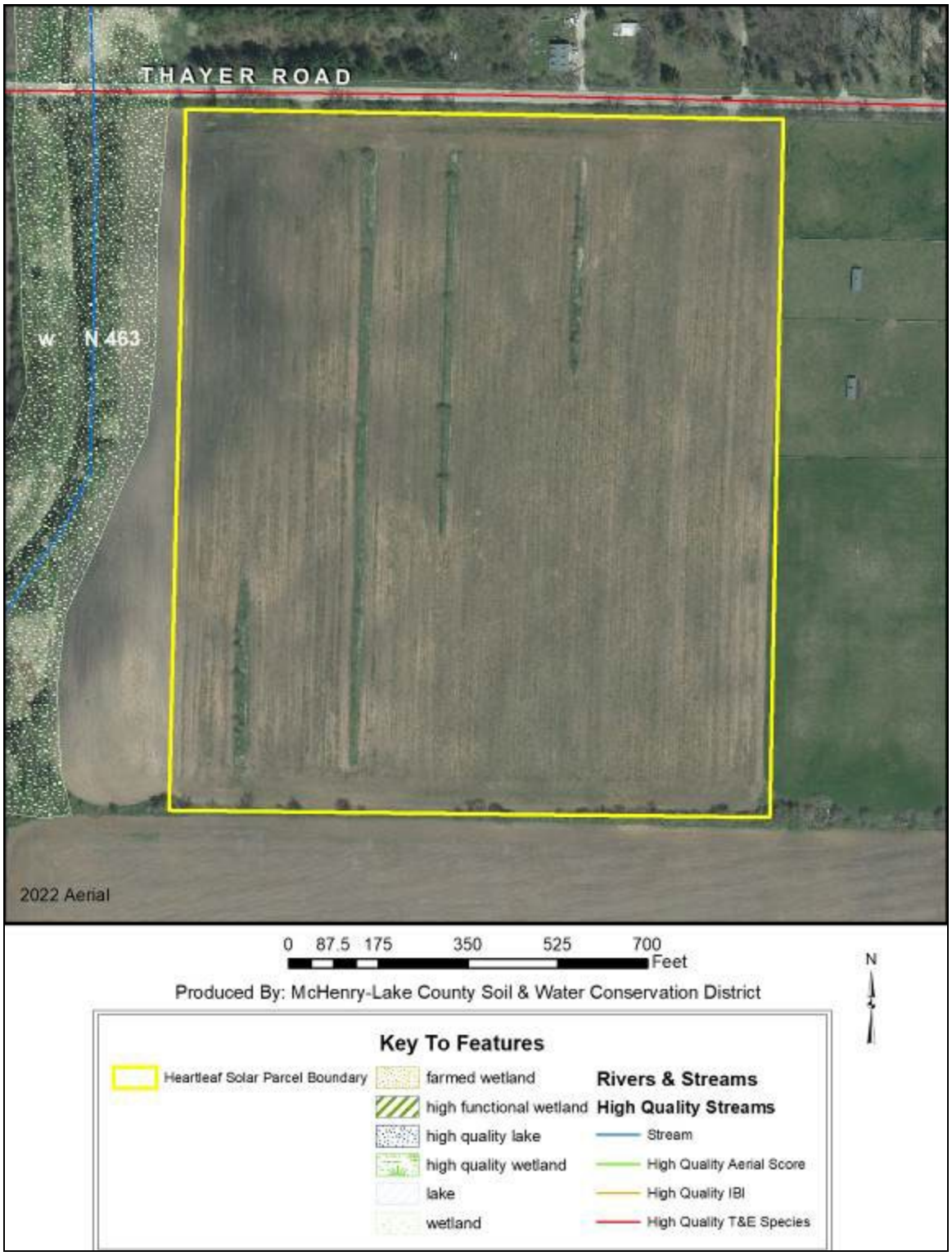
These wetlands, lakes and streams provide needed habitat and food for fish and wildlife. Diverse plants both common and rare are can be found in wetlands, and over 40 percent of Illinois' threatened and endangered plant and animal species rely on wetlands.

Wetlands have many other roles. They are critical to the control of flooding by storing vast quantities of runoff water during floods, and releasing it slowly to rivers and srteams as the floodwater recedes. This in turn helps to prevent erosion in downstream channels, aids in groundwater recharge, and stabilizes the baseflow in streams and rivers. Wetlands are also crucial in protecting water quality. Wetlands that border lakes and streams prevent erosion by holding soil in place and deflecting erosive flows and waves. They also remove sediment, nutrients, and toxic chemicals from runoff water.
Other benefits include groundwater recharge, discharge of clean water, recreation, enhancement of natural aesthetics and serve as buffers between adjacent developments.

This program designed by the EPA (Environmental Protection Agency), is intended to improve awareness of the functions and values of wetlands and other U.S. waters. It is also intended to inform landowners and developers that high quality sites may not be unsuitable for the disposal of dredged or fill material. These ADID projects can also provide guidance on the long-term protection and management of aquatic resources.

The wetland boundaries shown are not jurisdictional delineations. Any proposed drainage work in wet areas requires a certified wetland determination.

The ADID study indicates there are no wetlands on the parcel. (Map shown on next page.)


THAYER ROAD
W N 463
2022 Aerial
0 87.5 175 350 525 700
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
farmed wetland
high functional wetland
high quality lake
high quality wetland
lake
wetland
Rivers & Streams
High Quality Streams
Stream
High Quality Aerial Score
High Quality IBI
High Quality T&E Species

Hydric Soils

Soils information gives another indication of flooding potential. The soils map on this page indicates the soil(s) on the parcel that the Natural Resources Conservation Service indicates as hydric. Hydric soils by definition have seasonal high water at or near the soil surface and/or have potential flooding or ponding problems. All hydric soils range from poorly suited to unsuitable for building. One group of the hydric soils, are the organic soils, which formed from dead organic material. Organic soils are unsuitable for building because of not only the high water table, but also their subsidence problems.

It is also important to add the possibility of hydric inclusions in a soil type. An inclusion is a soil polygon that is too small to appear on these maps. While relatively insignificant for agricultural use, hydric soil inclusions become more important to more intense uses such as a residential subdivision.

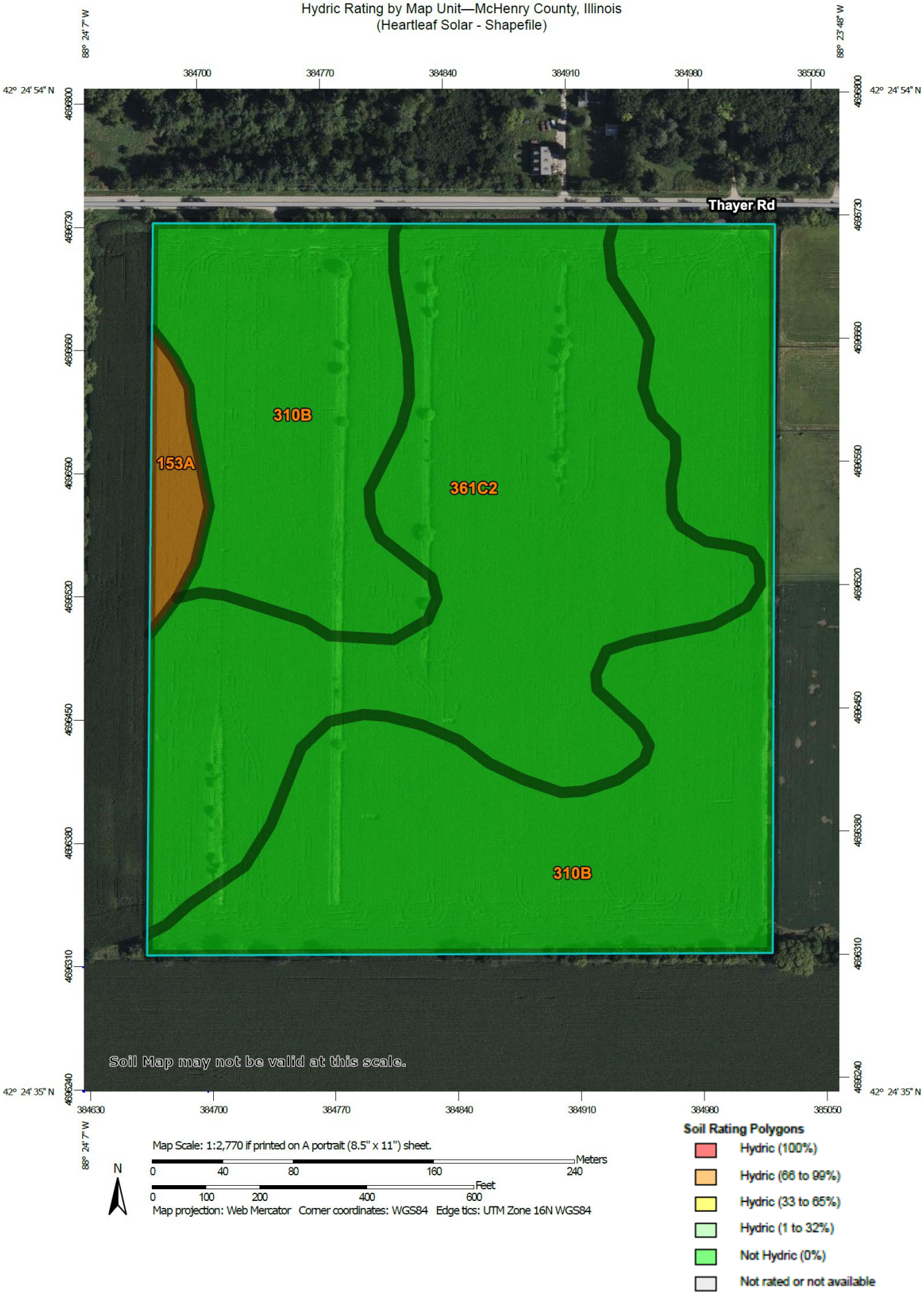
While considering hydric soils and hydric inclusions, it is noteworthy to mention that subsurface agriculture drainage tile occurs in almost all poorly drained and somewhat poorly drained soils. Drainage tile expedites drainage and facilitates farming. It is imperative that these drainage tiles remain undisturbed. A damaged subsurface drainage tile may return original hydrologic conditions to all of the areas that drained through the tile (ranging from less than one acre to many square miles.)

For an intense land use, such as a subdivision, the McHenry County SWCD recommends the following:

1. A topographical survey with 1 foot contour intervals to accurately define the flood area on the parcel.
2. An intensive soil survey to define most accurately the locations of the hydric soils and inclusions
3. A drainage tile survey on the area to locate the tiles that must be preserved.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	87 - Hydric	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes	0	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded	0	15.2	41.4%
Total Hydric			**0.9**	**2.5%**


Hydric Rating by Map Unit—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
40
80
160
240
Feet
0
100
200
400
600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84
Soil Rating Polygons
Hydric (100%)
Hydric (66 to 99%)
Hydric (33 to 65%)
Hydric (1 to 32%)
Not Hydric (0%)
Not rated or not available

WETLAND AND FLOODPLAIN REGULATIONS

PLEASE READ THE FOLLOWING IF YOU ARE PLANNING TO DO ANY WORK NEAR A STREAM (THIS INCLUDES SMALL UNNAMED STREAMS), LAKE, WETLAND OR FLOODWAY.

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against flood way encroachments, maintenance and enhancement of water quality, protection of fish and wildlife habitat and recreational resources, and, in general, the protection of total public interest. Unregulated use of the waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

WHO MUST APPLY

Anyone proposing to dredge, fill, rip rap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, flood plain or flood way subject to County, State or Federal regulatory jurisdiction should apply for agency approvals.

REGULATORY AGENCIES:

- **Wetlands or U.S. Waters: U.S. Army Corps of Engineers**, Chicago District,
  231 S. LaSalle St., Suite 1500
  Chicago, IL 60604
  Phone: (312) 846-5330
- **Isolated Wetlands and Floodplain: McHenry County Department of Planning & Development Stormwater Division,**
  2200 N. Seminary Ave., Woodstock, IL 60098
  Phone: (815) 334-4560
- **Flood plains: Illinois Department of Natural Resources \ Office of Water Resources**, 201 W. Center Court, Schaumburg, IL 60196-1096, phone (847).705.
- **Water Quality \ Erosion Control: Illinois Environmental Protection Agency**, Division of Water Pollution Control, Permit Section, Watershed Unit, 2200 Churchill Road, Springfield, IL 62706, phone (217).782.0610.

COORDINATION

We recommend Early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate or compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stages. This could reduce time required to process necessary approvals.

CAUTION: Contact with the United States Army Corps of Engineers is strongly advised before commencement of any work in or near a water of the United States. This could save considerable time and expense. Persons responsible for willful and direct violation of Section 10 of the River And Harbor Act of 1899 or Section 404 of the Federal Water Pollution Control Act are subject to fines ranging up to $27,500 per day of violation and imprisonment for up to one year or both.

THREATENED & ENDANGERED SPECIES

The State of Illinois provides habitat for 500 threatened and endangered species, including 356 plants and 144 animals. Twelve counties in Illinois have 50 or more endangered species, 5 of which are in northeastern Illinois. ("Endangered Species of Illinois," by the U.S. Fish & Wildlife Service, IDOC Division of Natural Heritage & Endangered Species Protection Board).

Approximately 40% of the state's listed species depend on wetlands for survival. The two main causes for species decline are the loss of habitat and the degradation of habitat. While habitat loss is the primary reason species become endangered, the effects of habitat change are not always seen overnight. It is seldom simply a case of individual animals or plants being killed. More often, habitat loss and the resulting species declines are indirectly caused and are the result of cumulative impacts over a period of time.

It is because of this slow encroachment of habitat degradation, fragmentation and loss that wildlife habitat must be looked at on a greater scale than just the site. Cumulative impacts occur because a small amount of damage is being done over here and little over there and no one is looking at the whole picture. Thus, the villages and county are strongly encouraged to look at habitat management on a regional scale.

THERE IS A POSSIBILITY FOR ENDANGERED SPECIES ON THE SITE. IF A REQUEST HAS NOT ALREADY BEEN SUBMITTED, THE PETITIONER SHOULD ASK THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES TO CHECK THIS PARCEL FOR THE PRESENCE OF THREATENED OR ENDANGERED SPECIES. SHOULD ANY SUCH SPECIES BE IDENTIFIED AS UTILIZING THIS PARCEL, THE PETITIONER WILL BE NOTIFIED ACCORDINGLY. FOR MORE INFORMATION ON HOW TO REQUEST AN ENDANGERED SPECIES CHECK ON THIS PARCEL, PLEASE VISIT
www.dnrecocat.state.il.us/ecopublic.

GLOSSARY

AGRICULTURAL PROTECTION AREAS (AG AREAS) - Allowed by P.A. 81-1173. An AG AREA consists of a minimum of 350 acres of farmland, as contiguous and compact as possible. Petitioned by landowners, AG AREAS protect for a period of ten years initially, then reviewed every eight years thereafter. AG AREA establishment exempts landowners from local nuisance ordinances directed at farming operations, and designated land can not receive special tax assessments on public improvements that do not benefit the land, e.g. water and sewer lines.

AGRICULTURE - The growing, harvesting and storing of crops including legumes, hay, grain, fruit and truck or vegetable including dairying, poultry, swine, sheep, beef cattle, pony and horse production, fur farms, and fish and wildlife farms; farm buildings used for growing, harvesting and preparing crop products for market, or for use on the farm; roadside stands, farm buildings for storing and protecting farm machinery and equipment from the elements, for housing livestock or poultry and for preparing livestock or poultry products for market; farm dwellings occupied by farm owners, operators, tenants or seasonal or year around hired farm workers.

B.G. - Below Grade. Under the surface of the Earth.

BEDROCK - Indicates depth at which bedrock occurs. Also lists hardness as rippable or hard.

FLOODING - Indicates frequency, duration, and period during year when floods are likely to occur.

HIGH LEVEL MANAGEMENT - The application of effective practices adapted to different crops, soils, and climatic conditions. Such practices include providing for adequate soil drainage, protection from flooding, erosion and runoff control, near optimum tillage, and planting the correct kind and amount of high quality seed. Weeds, diseases, and harmful insects are controlled. Favorable soil reaction and near optimum levels of available nitrogen, phosphorus, and potassium for individual crops are maintained. Efficient use is made of available crop residues, barnyard manure, and/or green manure crops. All operations, when combined efficiently and timely, can create favorable growing conditions and reduce harvesting losses -- within limits imposed by weather.

HIGH WATER TABLE - A seasonal high water table is a zone of saturation at the highest average depth during the wettest part of the year. May be apparent, perched, or artesian kinds of water tables.

Water Table, Apparent - A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water Table, Artesian - A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water Table, Perched - A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

DELINEATION - For Wetlands: A series of orange flags placed on the ground by a certified professional that outlines the wetland boundary on a parcel.

DETERMINATION - A polygon drawn on a map using map information that gives an outline of a wetland.

HYDRIC SOIL - This type of soil is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (USDA Natural Resources Conservation Service 1987)

INTENSIVE SOIL MAPPING - Mapping done on a smaller more intensive scale than a modern soil survey to determine soil properties of a specific site, e.g. mapping for septic suitability.

LAND EVALUATION AND SITE ASSESSMENT (L.E.S.A.) - LESA is a systematic approach for evaluating a parcel of land and to determine a numerical value for the parcel for farmland preservation purposes.

MODERN SOIL SURVEY - A soil survey is a field investigation of the soils of a specific area, supported by information from other sources. The kinds of soil in the survey area are identified and their extent shown on a map, and an accompanying report describes, defines, classifies, and interprets the soils. Interpretations predict the behavior of the soils under different used and the soils' response to management. Predictions are made for areas of soil at specific places. Soils information collected in a soil survey is useful in developing land-use plans and alternatives involving soil management systems and in evaluating and predicting the effects of land use.

PALUSTRINE - Name given to inland fresh water wetlands

PERMEABILITY - Values listed estimate the range (in rate and time) it takes for downward movement of water in the major soil layers when saturated, but

allowed to drain freely. The estimates are based on soil texture, soil structure, available data on permeability and infiltration tests, and observation of water movement through soils or other geologic materials.

PIQ - Parcel in question

POTENTIAL FROST ACTION - Damage that may occur to structures and roads due to ice lens formation causing upward and lateral soil movement. Based primarily on soil texture and wetness.

PRIME FARMLAND - Prime farmland soils are lands that are best suited to food, feed, forage, fiber and oilseed crops. It may be cropland, pasture, woodland, or other land, but it is not urban and built up land or water areas. It either is used for food or fiber or is available for those uses. The soil qualities, growing season, and moisture supply are those needed for a well managed soil economically to produce a sustained high yield of crops. Prime farmland produces in highest yields with minimum inputs of energy and economic resources, and farming the land results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent. (Source USDA Natural Resources Conservation Service)

PRODUCTIVITY INDEXES - Productivity indexes for grain crops express the estimated yields of the major grain crops grown in Illinois as a single percentage of the average yields obtained under basic management from several of the more productive soils in the state. This group of soils is composed of the Muscatine, Ipava, Sable, Lisbon, Drummer, Flanagan, Littleton, Elburn and Joy soils. Each of the 425 soils found in Illinois are found in Circular 1156 from the Illinois Cooperative Extension Service.

SEASONAL - When used in reference to wetlands indicates that the area is flooded only during a portion of the year.

SHRINK-SWELL POTENTIAL - Indicates volume changes to be expected for the specific soil material with changes in moisture content.

SOIL MAPPING UNIT - A map unit is a collection of soil areas of miscellaneous areas delineated in mapping. A map unit is generally an aggregate of the delineations of many different bodies of a kind of soil or miscellaneous area but may consist of only one delineated body. Taxonomic class names and accompanying phase terms are used to name soil map units. They are described in terms of ranges of soil properties within the limits defined for taxa and in terms of ranges of taxadjuncts and inclusions.

SOIL SERIES - A group of soils, formed from a particular type of parent material, having horizons that, except for texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

SUBSIDENCE - Applies mainly to organic soils after drainage. Soil material subsides due to shrinkage and oxidation.

TERRAIN - The area or surface over which a particular rock or group of rocks is prevalent.

TOPSOIL - That portion of the soil profile where higher concentrations of organic material, fertility, bacterial activity and plant growth take place. Depths of topsoil vary between soil types.

WATERSHED - An area of land that drains to an associated water resource such as a wetland, river or lake. Depending on the size and topography, watersheds can contain numerous tributaries, such as streams and ditches, and ponding areas such as detention structures, natural ponds and wetlands.

WETLAND - An area that has a predominance of hydric soils and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

REFERENCES

A Citizens' Guide to Protecting Wetlands. By The National Wildlife Federation. Washington, D.C., March 1989

Agricultural Areas Inventory
McHenry County Soil & Water Conservation District

FIRM - Flood Insurance Rate Maps for McHenry County. Prepared by FEMA - Federal Emergency Management Agency.

Flood of Record (Hydrologic Atlas) for McHenry County
U.S. Geologic Survey

Geologic Mapping for Environmental Planning, McHenry County, Illinois. Department of Natural Resources Illinois State Geological Survey, Circular 559, 1997

Geology For Planning in Boone and Winnebago Counties. State Geological Survey Division, Circular 531. 1984

Hydrologic Unit Map for McHenry County.
Natural Resources Conservation Service, United States Department of Agriculture

Hydric Soils of the United States. USDA Natural Resources Conservation Service, 1987.

Illinois Natural Areas Inventory
Illinois Department of Natural Resources

Land Evaluation and Site Assessment System. 2005. The McHenry County Department of Planning and McHenry County Soil and Water Conservation District. In cooperation with: USDS, Natural Resources Conservation Service

McHenry County Advanced Identification of Wetlands (ADID)
Northeastern Illinois Planning Commission

McHenry County Health Code relating to septic system suitability

McHenry County 2030 Land Use Plan
McHenry County Dept. of Planning and Development

McHenry County Natural Areas Inventory
McHenry County Conservation District

McHenry County, Illinois Fire Protection Districts
McHenry County Dept. of Planning and Development

McHenry County, Illinois Historic Landmarks
McHenry County Historic Preservation Committee

Natural Resources Conservation Service Wetland Inventory Map. United States Department of Agriculture

The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunities, prepared by the Nature Conservancy Great Lakes Program 79W. Monroe Street, Suite 1309, Chicago, IL 60603, January 1994

Wetlands - The Corps of Engineers' Administration of the Section 404 Program July 1988 (GAO/RCED-88-110)

Soil Erosion by Water - United States Department of Agriculture Natural Resources Conservation Service. Agriculture Information Bulletin 513.

Soil Survey of McHenry County, Illinois Part 1 and Part 2
Natural Resources Conservation Service, United States Department of Agriculture.

Exhibit E

Landowner Authorization

[Attached]

Christopher G. Dahm
5707 Miller Rd.
Wonder Lake, IL 60097

September 24, 2024

McHenry County, Illinois
Planning & Development Department
2200 N Seminary Avenue
Woodstock, Illinois 60098

Re: Landowner Acknowledgement and Authorization of Heartleaf Solar, LLC's Conditional Use Permit Request

Dear McHenry County Planning & Development Department:

As the owner of parcels 08-03-200-006, 08-03-200-007, 08-03-200-008, 08-03-200-023, and 08-03-200-028 in McHenry County, Illinois ("Project Parcels"), I authorize Heartleaf Solar, LLC to submit a Conditional Use Permit application for the development, construction, and operation of a commercial solar energy project on the Project Parcels.

Signed,

CHRISTOPHER G. DAHM, AS TRUSTEE OF THE CHRISTOPHER G. DAHM TRUST

By: _____
Name: Christopher G. Dahm
Title: Trustee
Date:

OFFICIAL SEAL
LUKE C LOHMEYER
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires 2/4/25

SUBSCRIBED and SWORN to before me

This 21 day of October, 2024

_____
NOTARY PUBLIC

Exhibit F

Illinois Department of Agriculture

Agricultural Impact Mitigation Agreement

[Attached]

STANDARD AGRICULTURAL IMPACT MITIGATION AGREEMENT
between
Heartleaf Solar, LLC

and the
ILLINOIS DEPARTMENT OF AGRICULTURE
Pertaining to the Construction of a Commercial Solar Energy Facility
in
McHenry County, Illinois

Pursuant to the Renewable Energy Facilities Agricultural Impact Mitigation Act (505 ILCS 147), the following standards and policies are required by the Illinois Department of Agriculture (IDOA) to help preserve the integrity of any Agricultural Land that is impacted by the Construction and Deconstruction of a Commercial Solar Energy Facility. They were developed with the cooperation of agricultural agencies, organizations, Landowners, Tenants, drainage contractors, and solar energy companies to comprise this Agricultural Impact Mitigation Agreement (AIMA).

Heartleaf Solar, LLC, hereafter referred to as Commercial Solar Energy Facility Owner, or simply as Facility Owner, plans to develop and/or operate a 5 MWac Commercial Solar Energy Facility in **McHenry** County [GPS Coordinates: 42.41220, -88.39942], which will consist of up to 37 +/- acres that will be covered by solar facility related components, such as solar panel arrays, racking systems, access roads, an onsite underground collection system, inverters and transformers and any affiliated electric transmission lines. This AIMA is made and entered between the Facility Owner and the IDOA.

If Construction does not commence within four years after this AIMA has been fully executed, this AIMA shall be revised, with the Facility Owner's input, to reflect the IDOA's most current Solar Farm Construction and Deconstruction Standards and Policies. This AIMA, and any updated AIMA, shall be filed with the County Board by the Facility Owner prior to the commencement of Construction.

The below prescribed standards and policies are applicable to Construction and Deconstruction activities occurring partially or wholly on privately owned agricultural land.

Conditions of the AIMA

The mitigative actions specified in this AIMA shall be subject to the following conditions:

A. All Construction or Deconstruction activities may be subject to County or other local requirements. However, the specifications outlined in this AIMA shall be the minimum standards applied to all Construction or Deconstruction activities. IDOA may utilize any legal means to enforce this AIMA.

B. Except for Section 17. B. through F., all actions set forth in this AIMA are subject to modification through negotiation by Landowners and the Facility Owner, provided such changes are negotiated in advance of the respective Construction or Deconstruction activities.

C. The Facility Owner may negotiate with Landowners to carry out the actions that Landowners wish to perform themselves. In such instances, the Facility Owner shall offer Landowners the area commercial rate for their machinery and labor costs.

D. All provisions of this AIMA shall apply to associated future Construction, maintenance, repairs, and Deconstruction of the Facility referenced by this AIMA.

E. The Facility Owner shall keep the Landowners and Tenants informed of the Facility's Construction and Deconstruction status, and other factors that may have an impact upon their farming operations.

F. The Facility Owner shall include a statement of its adherence to this AIMA in any environmental assessment and/or environmental impact statement.

G. Execution of this AIMA shall be made a condition of any Conditional/Special Use Permit. Not less than 30 days prior to the commencement of Construction, a copy of this AIMA shall be provided by the Facility Owner to each Landowner that is party to an Underlying Agreement. In addition, this AIMA shall be incorporated into each Underlying Agreement.

H. The Facility Owner shall implement all actions to the extent that they do not conflict with the requirements of any applicable federal, state and local rules and regulations and other permits and approvals that are obtained by the Facility Owner for the Facility.

I. No later than 45 days prior to the Construction and/or Deconstruction of a Facility, the Facility Owner shall provide the Landowner(s) with a telephone number the Landowner can call to alert the Facility Owner should the Landowner(s) have questions or concerns with the work which is being done or has been carried out on his/her property.

J. If there is a change in ownership of the Facility, the Facility Owner assuming ownership of the Facility shall provide written notice within 90 days of ownership transfer, to the Department, the County, and to Landowners of such change. The Financial Assurance requirements and the other terms of this AIMA shall apply to the new Facility Owner.

K. The Facility Owner shall comply with all local, state and federal laws and regulations, specifically including the worker protection standards to protect workers from pesticide exposure.

L. Within 30 days of execution of this AIMA, the Facility Owner shall use Best Efforts to provide the IDOA with a list of all Landowners that are party to an Underlying Agreement and known Tenants of said Landowner who may be affected by the Facility. As the list of Landowners and Tenants is updated, the Facility Owner shall notify the IDOA of any additions or deletions.

M. If any provision of this AIMA is held to be unenforceable, no other provision shall be affected by that holding, and the remainder of the AIMA shall be interpreted as if it did not contain the unenforceable provision.

Definitions

Abandonment	When Deconstruction has not been completed within 12 months after the Commercial Solar Energy Facility reaches the end of its useful life. For purposes of this definition, a Commercial Solar Energy Facility shall be presumed to have reached the end of its useful life if the Commercial Solar Energy Facility Owner fails, for a period of 6 consecutive months, to pay the Landowner amounts owed in accordance with an Underlying Agreement.

Aboveground Cable	Electrical power lines installed above ground surface to be utilized for conveyance of power from the solar panels to the solar facility inverter and/or point of interconnection to utility grid or customer electric meter.
Agricultural Impact Mitigation Agreement (AIMA)	The Agreement between the Facility Owner and the Illinois Department of Agriculture (IDOA) described herein.
Agricultural Land	Land used for Cropland, hayland, pastureland, managed woodlands, truck gardens, farmsteads, commercial ag-related facilities, feedlots, livestock confinement systems, land on which farm buildings are located, and land in government conservation programs used for purposes as set forth above.
Best Efforts	Diligent, good faith, and commercially reasonable efforts to achieve a given objective or obligation.
Commercial Operation Date	The calendar date of which the Facility Owner notifies the Landowner, County, and IDOA in writing that commercial operation of the facility has commenced. If the Facility Owner fails to provide such notifications, the Commercial Operation Date shall be the execution date of this AIMA plus 6 months.
Commercial Solar Energy Facility (Facility)	A solar energy conversion facility equal to or greater than 500 kilowatts in total nameplate capacity, including a solar energy conversion facility seeking an extension of a permit to construct granted by a county or municipality before June 29, 2018. "Commercial solar energy facility" does not include a solar energy conversion facility: (1) for which a permit to construct has been issued before June 29, 2018; (2) that is located on land owned by the commercial solar energy facility owner; (3) that was constructed before June 29, 2018; or (4) that is located on the customer side of the customer's electric meter and is primarily used to offset that customer's electricity load and is limited in nameplate capacity to less than or equal to 2,000 kilowatts.
Commercial Solar Energy Facility Owner deemed (Facility Owner)	A person or entity that owns a commercial solar energy facility. A Commercial Solar Energy Facility Owner is not nor shall it be to be a public utility as defined in the Public Utilities Act.
County	The County or Counties where the Commercial Solar Energy Facility is located.
Construction	The installation, preparation for installation and/or repair of a Facility.
Cropland	Land used for growing row crops, small grains or hay; includes land which was formerly used as cropland, but is currently enrolled in a government conservation program; also includes pastureland that is classified as Prime Farmland.

Deconstruction	The removal of a Facility from the property of a Landowner and the restoration of that property as provided in the AIMA.
Deconstruction Plan	A plan prepared by a Professional Engineer, at the Facility's expense, that includes: (1) the estimated Deconstruction cost, in current dollars at the time of filing, for the Facility, considering among other things: i. the number of solar panels, racking, and related facilities involved; ii. the original Construction costs of the Facility; iii. the size and capacity, in megawatts of the Facility; iv. the salvage value of the facilities (if all interests in salvage value are subordinate to that of the Financial Assurance holder if abandonment occurs); v. the Construction method and techniques for the Facility and for other similar facilities; and (2) a comprehensive detailed description of how the Facility Owner plans to pay for the Deconstruction of the Facility.
Department	The Illinois Department of Agriculture (IDOA).
Financial Assurance	A reclamation or surety bond or other commercially available financial assurance that is acceptable to the County, with the County or Landowner as beneficiary.
Landowner	Any person with an ownership interest in property that is used for agricultural purposes and that is party to an Underlying Agreement.
Prime Farmland	Agricultural Land comprised of soils that are defined by the USDA Natural Resources Conservation Service (NRCS) as "Prime Farmland" (generally considered to be the most productive soils with the least input of nutrients and management).
Professional Engineer	An engineer licensed to practice engineering in the State of Illinois.
Soil and Water Conservation District (SWCD)	A unit of local government that provides technical and financial assistance to eligible Landowners for the conservation of soil and water resources.
Tenant	Any person, apart from the Facility Owner, lawfully residing or leasing/renting land that is subject to an Underlying Agreement.
Topsoil	The uppermost layer of the soil that has the darkest color or the highest content of organic matter; more specifically, it is defined as the "A" horizon.
Underlying Agreement	The written agreement between the Facility Owner and the Landowner(s) including, but not limited to, an easement, option, lease, or license under the terms of which another person has constructed, constructs, or intends to construct a Facility on the property of the Landowner.

Underground Cable	Electrical power lines installed below the ground surface to be utilized for conveyance of power within a Facility or from a Commercial Solar Energy Facility to the electric grid.
USDA Natural Resources Conservation Service (NRCS)	An agency of the United States Department of Agriculture that provides America's farmers with financial and technical assistance to aid with natural resources conservation.

Construction and Deconstruction Standards and Policies

1. Support Structures

A. Only single pole support structures shall be used for the Construction and operation of the Facility on Agricultural Land. Other types of support structures, such as lattice towers or H-frames, may be used on nonagricultural land.

B. Where a Facility's Aboveground Cable will be adjacent and parallel to highway and/or railroad right-of-way, but on privately owned property, the support structures shall be placed as close as reasonably practicable and allowable by the applicable County Engineer or other applicable authorities to the highway or railroad right-of-way. The only exceptions may be at jogs or weaves on the highway alignment or along highways or railroads where transmission and distribution lines are already present.

C. When it is not possible to locate Aboveground Cable next to highway or railroad right-of-way, Best Efforts shall be expended to place all support poles in such a manner to minimize their placement on Cropland (i.e., longer than normal above ground spans shall be utilized when traversing Cropland).

2. Aboveground Facilities

Locations for facilities shall be selected in a manner that is as unobtrusive as reasonably possible to ongoing agricultural activities occurring on the land that contains or is adjacent to the Facility.

3. Guy Wires and Anchors

Best Efforts shall be made to place guy wires and their anchors, if used, out of Cropland, pastureland and hayland, placing them instead along existing utilization lines and on land other than Cropland. Where this is not feasible, Best Efforts shall be made to minimize guy wire impact on Cropland. All guy wires shall be shielded with highly visible guards.

4. Underground Cabling Depth

A. Underground electrical cables located outside the perimeter of the (fence) of the solar panels shall be buried with:

1. a minimum of 5 feet of top cover where they cross Cropland.
2. a minimum of 5 feet of top cover where they cross pastureland or other non-Cropland classified as Prime Farmland.
3. a minimum of 3 feet of top cover where they cross pastureland and other Agricultural Land not classified as Prime Farmland.

4. a minimum of 3 feet of top cover where they cross wooded/brushy land.

B. Provided that the Facility Owner removes the cables during Deconstruction, underground electric cables may be installed to a minimum depth of 18 inches:

1. Within the fenced perimeter of the Facility; or

2. When buried under an access road associated with the Facility provided that the location and depth of cabling is clearly marked at the surface.

C. If Underground Cables within the fenced perimeter of the solar panels are installed to a minimum depth of 5 feet, they may remain in place after Deconstruction.

5. Topsoil Removal and Replacement

A. Any excavation shall be performed in a manner to preserve topsoil. Best Efforts shall be made to store the topsoil near the excavation site in such a manner that it will not become intermixed with subsoil materials.

B. Best Efforts shall be made to store all disturbed subsoil material near the excavation site and separate from the topsoil.

C. When backfilling an excavation site, Best Efforts shall be used to ensure the stockpiled subsoil material will be placed back into the excavation site before replacing the topsoil.

D. Refer to Section 7 for procedures pertaining to rock removal from the subsoil and topsoil.

E. Refer to Section 8 for procedures pertaining to the repair of compaction and rutting of the topsoil.

F. Best Efforts shall be performed to place the topsoil in a manner so that after settling occurs, the topsoil's original depth and contour will be restored as close as reasonably practicable. The same shall apply where excavations are made for road, stream, drainage ditch, or other crossings. In no instance shall the topsoil materials be used for any other purpose unless agreed to explicitly and in writing by the Landowner.

G. Based on the mutual agreement of the landowner and Facility Owner, excess soil material resulting from solar facility excavation shall either be removed or stored on the Landowner's property and reseeded per the applicable National Pollution Discharge Elimination System (NPDES) permit/Stormwater Pollution Prevention Plan (SWPPP). After the Facility reaches the end of its Useful Life, the excess subsoil material shall be returned to an excavation site or removed from the Landowner's property, unless otherwise agreed to by Landowner.

6. Rerouting and Permanent Repair of Agricultural Drainage Tiles

The following standards and policies shall apply to underground drainage tile line(s) directly or indirectly affected by Construction and/or Deconstruction:

A. Prior to Construction, the Facility Owner shall work with the Landowner to identify drainage tile lines traversing the property subject to the Underlying Agreement to the extent reasonably practicable. All drainage tile lines identified in this manner shall be shown on the Construction and Deconstruction Plans.

B. The location of all drainage tile lines located adjacent to or within the footprint of the Facility shall be recorded using Global Positioning Systems (GPS) technology. Within 60 days after Construction is complete, the Facility Owner shall provide the Landowner, the IDOA, and the respective County Soil and Water Conservation District (SWCD) with "as built" drawings (strip maps) showing the location of all drainage tile lines by survey station encountered in the Construction of the Facility, including any tile line repair location(s), and any underground cable installed as part of the Facility.

C. **Maintaining Surrounding Area Subsurface Drainage**

If drainage tile lines are damaged by the Facility, the Facility Owner shall repair the lines or install new drainage tile line(s) of comparable quality and cost to the original(s), and of sufficient size and appropriate slope in locations that limit direct impact from the Facility. If the damaged tile lines cause an unreasonable disruption to the drainage system, as determined by the Landowner, then such repairs shall be made promptly to ensure appropriate drainage. Any new line(s) may be located outside of, but adjacent to the perimeter of the Facility. Disrupted adjacent drainage tile lines shall be attached thereto to provide an adequate outlet for the disrupted adjacent tile lines.

D. **Re-establishing Subsurface Drainage Within Facility Footprint**

Following Deconstruction and using Best Efforts, if underground drainage tile lines were present within the footprint of the facility and were severed or otherwise damaged during original Construction, facility operation, and/or facility Deconstruction, the Facility Owner shall repair existing drainage tiles or install new drainage tile lines of comparable quality and cost to the original, within the footprint of the Facility with sufficient capacity to restore the underground drainage capacity that existed within the footprint of the Facility prior to Construction. Such installation shall be completed within 12 months after the end of the useful life of the Facility and shall be compliant with Figures 1 and 2 to this Agreement or based on prudent industry standards if agreed to by Landowner.

E. If there is any dispute between the Landowner and the Facility Owner on the method of permanent drainage tile line repair, the appropriate County SWCD's opinion shall be considered by the Facility Owner and the Landowner.

F. During Deconstruction, all additional permanent drainage tile line repairs beyond those included above in Section 6.D. must be made within 30 days of identification or notification of the damage, weather and soil conditions permitting. At other times, such repairs must be made at a time mutually agreed upon by the Facility Owner and the Landowner. If the Facility Owner and Landowner cannot agree upon a reasonable method to complete this restoration, the Facility Owner may implement the recommendations of the appropriate County SWCD and such implementation constitutes compliance with this provision.

G. Following completion of the work required pursuant to this Section, the Facility Owner shall be responsible for correcting all drainage tile line repairs that fail due to Construction and/or Deconstruction for one year following the completion of Construction or Deconstruction, provided those repairs were made by the Facility Owner. The Facility Owner shall not be responsible for drainage tile repairs that the Facility Owner pays the Landowner to perform.

7. Rock Removal

With any excavations, the following rock removal procedures pertain only to rocks found in the uppermost 42 inches of soil, the common freeze zone in Illinois, which emerged or were brought to the site as a result of Construction and/or Deconstruction.

A. Before replacing any topsoil, Best Efforts shall be taken to remove all rocks greater than 3 inches in any dimension from the surface of exposed subsoil which emerged or were brought to the site as a result of Construction and/or Deconstruction.

B. If trenching, blasting, or boring operations are required through rocky terrain, precautions shall be taken to minimize the potential for oversized rocks to become interspersed in adjacent soil material.

C. Rocks and soil containing rocks removed from the subsoil areas, topsoil, or from any excavations, shall be removed from the Landowner's premises or disposed of on the Landowner's premises at a location that is mutually acceptable to the Landowner and the Facility Owner.

8. Repair of Compaction and Rutting

A. Unless the Landowner opts to do the restoration work on compaction and rutting, after the topsoil has been replaced post-Deconstruction, all areas within the boundaries of the Facility that were traversed by vehicles and Construction and/or Deconstruction equipment that exhibit compaction and rutting shall be restored by the Facility Owner. All prior Cropland shall be ripped at least 18 inches deep or to the extent practicable, and all pasture and woodland shall be ripped at least 12 inches deep or to the extent practicable. The existence of drainage tile lines or underground utilities may necessitate less ripping depth. The disturbed area shall then be disked.

B. All ripping and disking shall be done at a time when the soil is dry enough for normal tillage operations to occur on Cropland adjacent to the Facility.

C. The Facility Owner shall restore all rutted land to a condition as close as possible to its original condition upon Deconstruction, unless necessary earlier as determined by the Landowner.

D. If there is any dispute between the Landowner and the Facility Owner as to what areas need to be ripped/disked or the depth at which compacted areas should be ripped/disked, the appropriate County SWCD's opinion shall be considered by the Facility Owner and the Landowner.

9. Construction During Wet Weather

Except as provided below, construction activities are not allowed on agricultural land during times when normal farming operations, such as plowing, disking, planting or harvesting, cannot take place due to excessively wet soils. With input from the landowner, wet weather conditions may be determined on a field by field basis.

A. Construction activities on prepared surfaces, surfaces where topsoil and subsoil have been removed, heavily compacted in preparation, or otherwise stabilized (e.g. through cement mixing) may occur at the discretion of the Facility Owner in wet weather conditions.

B. Construction activities on unprepared surfaces will be done only when work will not result in rutting which may mix subsoil and topsoil. Determination as to the potential of subsoil and topsoil mixing will be made in consultation with the underlying Landowner, or, if approved by the Landowner, his/her designated tenant or designee.

10. Prevention of Soil Erosion

A. The Facility Owner shall work with Landowners and create and follow a SWPPP to prevent excessive erosion on land that has been disturbed by Construction or Deconstruction of a Facility.

B. If the Landowner and Facility Owner cannot agree upon a reasonable method to control erosion on the Landowner's property, the Facility Owner shall consider the recommendations of the appropriate County SWCD to resolve the disagreement.

C. The Facility Owner may, per the requirements of the project SWPPP and in consultation with the Landowner, seed appropriate vegetation around all panels and other facility components to prevent erosion. The Facility Owner must utilize Best Efforts to ensure that all seed mixes will be as free of any noxious weed seeds as possible. The Facility Owner shall consult with the Landowner regarding appropriate varieties to seed.

11. Repair of Damaged Soil Conservation Practices

Consultation with the appropriate County SWCD by the Facility Owner shall be carried out to determine if there are soil conservation practices (such as terraces, grassed waterways, etc.) that will be damaged by the Construction and/or Deconstruction of the Facility. Those conservation practices shall be restored to their preconstruction condition as close as reasonably practicable following Deconstruction in accordance with USDA NRCS technical standards. All repair costs shall be the responsibility of the Facility Owner.

12. Compensation for Damages to Private Property

The Facility Owner shall reasonably compensate Landowners for damages caused by the Facility Owner. Damage to Agricultural Land shall be reimbursed to the Landowner as prescribed in the applicable Underlying Agreement.

13. Clearing of Trees and Brush

A. If trees are to be removed for the Construction or Deconstruction of a Facility, the Facility Owner shall consult with the Landowner to determine if there are trees of commercial or other value to the Landowner.

B. If there are trees of commercial or other value to the Landowner, the Facility Owner shall allow the Landowner the right to retain ownership of the trees to be removed and the disposition of the removed trees shall be negotiated prior to the commencement of land clearing.

14. Access Roads

A. To the extent practicable, access roads shall be designed to not impede surface drainage and shall be built to minimize soil erosion on or near the access roads.

B. Access roads may be left intact during Construction, operation or Deconstruction through mutual agreement of the Landowner and the Facility Owner unless otherwise restricted by federal, state, or local regulations.

C. If the access roads are removed, Best Efforts shall be expended to assure that the land shall be restored to equivalent condition(s) as existed prior to their construction, or as otherwise agreed to by the Facility Owner and the Landowner. All access roads that are removed shall be ripped to a depth of 18 inches. All ripping shall be performed consistent with Section 8.

15. Weed/Vegetation Control

A. The Facility Owner shall provide for weed control in a manner that prevents the spread of weeds. Chemical control, if used, shall be done by an appropriately licensed pesticide applicator.

B. The Facility Owner shall be responsible for the reimbursement of all reasonable costs incurred by owners of agricultural land where it has been determined by the appropriate state or county entity that weeds have spread from the Facility to their property. Reimbursement is contingent upon written notice to the Facility Owner. Facility Owner shall reimburse the property owner within 45 days after notice is received.

C. The Facility Owner shall ensure that all vegetation growing within the perimeter of the Facility is properly and appropriately maintained. Maintenance may include, but not be limited to, mowing, trimming, chemical control, or the use of livestock as agreed to by the Landowner.

D. The Deconstruction plans must include provisions for the removal of all weed control equipment used in the Facility, including weed-control fabrics or other ground covers.

16. Indemnification of Landowners

The Facility Owner shall indemnify all Landowners, their heirs, successors, legal representatives, and assigns from and against all claims, injuries, suits, damages, costs, losses, and reasonable expenses resulting from or arising out of the Commercial Solar Energy Facility, including Construction and Deconstruction thereof, and also including damage to such Facility or any of its appurtenances, except where claims, injuries, suits, damages, costs, losses, and expenses are caused by the negligence or intentional acts, or willful omissions of such Landowners, and/or the Landowners heirs, successors, legal representatives, and assigns.

17. Deconstruction Plans and Financial Assurance of Commercial Solar Energy Facilities

A. Deconstruction of a Facility shall include the removal/disposition of all solar related equipment/facilities, including the following utilized for operation of the Facility and located on Landowner property:

1. Solar panels, cells and modules;
2. Solar panel mounts and racking, including any helical piles, ground screws, ballasts, or other anchoring systems;
3. Solar panel foundations, if used (to depth of 5 feet);

4. Transformers, inverters, energy storage facilities, or substations, including all components and foundations; however, Underground Cables at a depth of 5 feet or greater may be left in place;
5. Overhead collection system components;
6. Operations/maintenance buildings, spare parts buildings and substation/switching gear buildings unless otherwise agreed to by the Landowner;
7. Access Road(s) unless Landowner requests in writing that the access road is to remain;
8. Operation/maintenance yard/staging area unless otherwise agreed to by the Landowner; and
9. Debris and litter generated by Deconstruction and Deconstruction crews.

B. The Facility Owner shall, at its expense, complete Deconstruction of a Facility within twelve (12) months after the end of the useful life of the Facility.

C. During the County permit process, or if none, then prior to the commencement of construction, the Facility Owner shall file with the County a Deconstruction Plan. The Facility Owner shall file an updated Deconstruction Plan with the County on or before the end of the tenth year of commercial operation.

D. The Facility Owner shall provide the County with Financial Assurance to cover the estimated costs of Deconstruction of the Facility. Provision of this Financial Assurance shall be phased in over the first 11 years of the Project's operation as follows:

1. On or before the first anniversary of the Commercial Operation Date, the Facility Owner shall provide the County with Financial Assurance to cover ten (10) percent of the estimated costs of Deconstruction of the Facility as determined in the Deconstruction Plan.
2. On or before the sixth anniversary of the Commercial Operation Date, the Facility Owner shall provide the County with Financial Assurance to cover fifty (50) percent of the estimated costs of Deconstruction of the Facility as determined in the Deconstruction Plan.
3. On or before the eleventh anniversary of the Commercial Operation Date, the Facility Owner shall provide the County with Financial Assurance to cover one hundred (100) percent of the estimated costs of Deconstruction of the Facility as determined in the updated Deconstruction Plan provided during the tenth year of commercial operation.

The Financial Assurance shall not release the surety from liability until the Financial Assurance is replaced. The salvage value of the Facility may only be used to reduce the estimated costs of Deconstruction if the County agrees that all interests in the salvage value are subordinate or have been subordinated to that of the County if Abandonment occurs.

E. The County may, but is not required to, reevaluate the estimated costs of Deconstruction of any Facility after the tenth anniversary, and every five years thereafter, of the Commercial Operation Date. Based on any reevaluation, the County may require changes in the level of Financial Assurance used to calculate the phased Financial Assurance levels described in Section 17.D. required from the Facility Owner. If the County is unable to its satisfaction to perform the investigations necessary to approve the Deconstruction Plan filed by the Facility Owner, then the County and Facility may mutually agree on the selection of a Professional Engineer independent of the Facility Owner to conduct any necessary investigations. The Facility Owner shall be responsible for the cost of any such investigations.

F. Upon Abandonment, the County may take all appropriate actions for Deconstruction including drawing upon the Financial Assurance.

Concurrence of the Parties to this AIMA

The Illinois Department of Agriculture and **Heartleaf Solar, LLC** concur that this AIMA is the complete AIMA governing the mitigation of agricultural impacts that may result from the Construction and Deconstruction of the solar farm project in **McHenry** County within the State of Illinois.

The effective date of this AIMA commences on the date of execution.

STATE OF ILLINOIS
DEPARTMENT OF AGRICULTURE

Jerry Costello II

By: Jerry Costello II, Director 4

Clay Nordsiek

By Clay Nordsiek, Deputy General Counsel

801 E. Sangamon Avenue,
State Fairgrounds, POB 19281
Springfield, IL 62794-9281

9/26, 2024

Heartleaf Solar, LLC

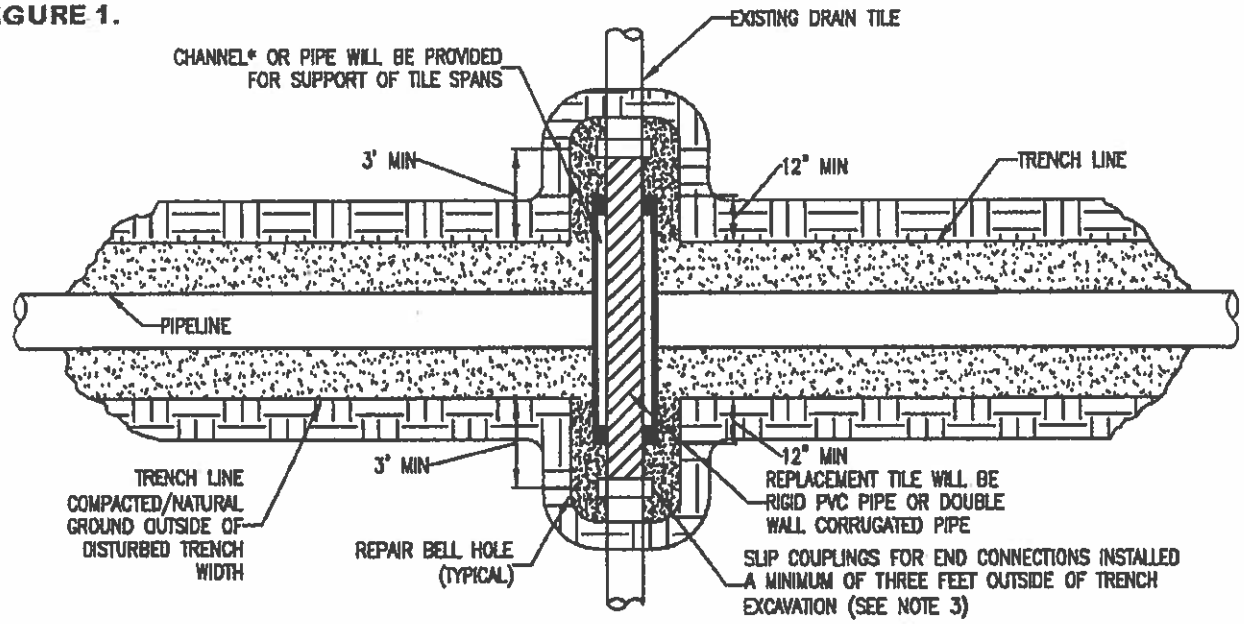
By Jonathan Carson

P.O. Box 310
Highland Park, IL 60035

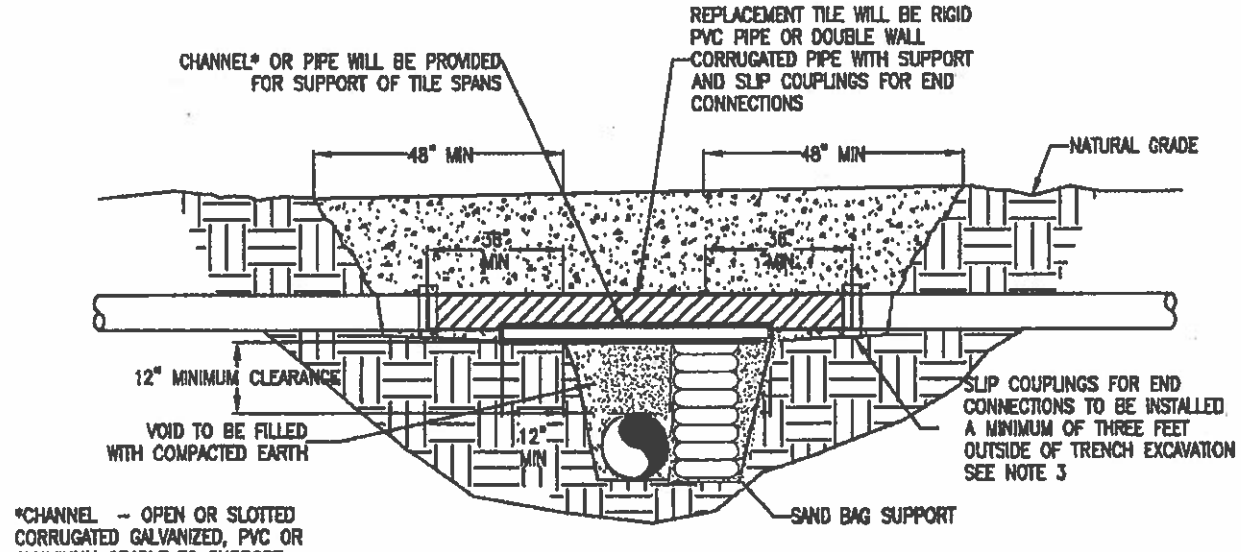
Address

9/4, 2024

FIGURE 1.



PLAN
N.T.S.



CROSS SECTION
N.T.S.

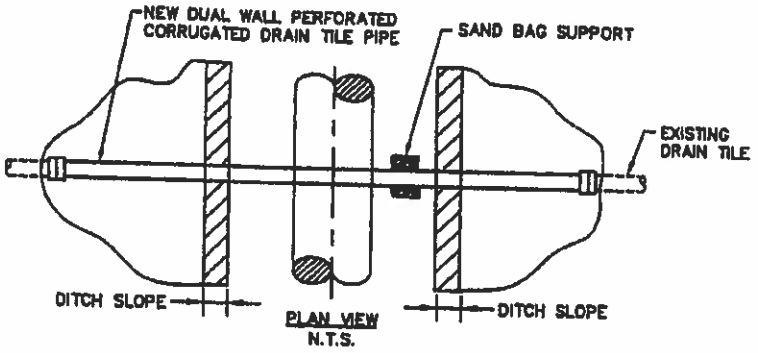
NOTE:

1. IMMEDIATELY REPAIR TILE IF WATER IS FLOWING THROUGH TILE AT TIME OF TRENCHING. IF NO WATER IS FLOWING AND TEMPORARY REPAIR IS DELAYED, OR NOT MADE BY THE END OF THE WORK DAY, A SCREEN OR APPROPRIATE 'NIGHT CAP' SHALL BE PLACED ON OPEN ENDS OF TILE TO PREVENT ENTRAPMENT OF ANIMALS ETC.
2. CHANNEL OR PIPE (OPEN OR SLOTTED) MADE OF CORRUGATED GALVANIZED PIPE, PVC OR ALUMINUM WILL BE USED FOR SUPPORT OF DRAIN TILE SPANS.
3. INDUSTRY STANDARDS SHALL BE FOLLOWED TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES.

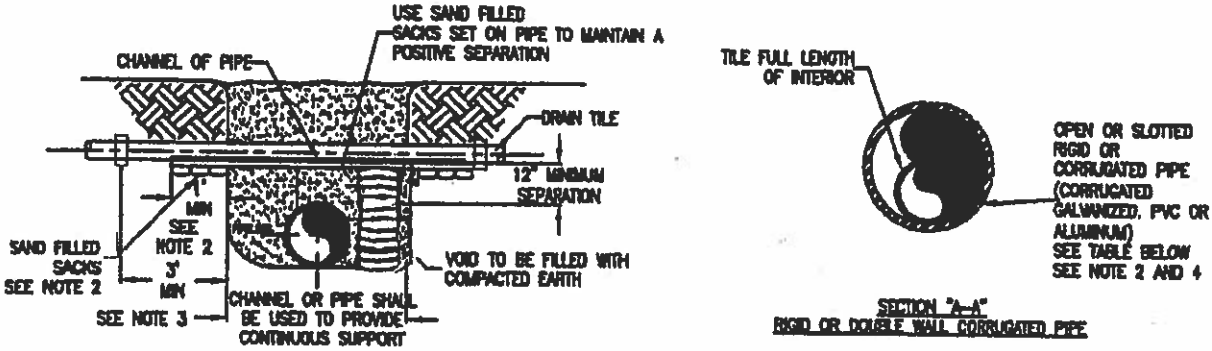
TEMPORARY DRAIN TILE REPAIR

PAGE 1 of 2

FIGURE 2.



PLAN VIEW



END VIEWS

MINIMUM SUPPORT TABLE			
TILE SIZE	CHANNEL SIZE	PIPE SIZE	
3"	4" @ 5.4 #/ft	4"	STD. WT.
4"-5"	5" @ 6.7 #/ft	6"	STD. WT.
8"-9"	7" @ 9.8 #/ft	9"-10"	STD. WT.
10"	10" @ 15.3 #/ft	12"	STD. WT.

NOTE:

1. TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF THE TILE NEEDS TO BE RELOCATED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.

2. 1'-0" MINIMUM LENGTH OF CHANNEL OR RIGID PIPE (OPEN OR SLOTTED CORRUGATED GALVANIZED. PVC OR ALUMINUM CRADLE) SHALL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT RIGHT ANGLES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH. SHIM WITH SAND BAGS TO UNDISTURBED SOIL FOR SUPPORT AND DRAINAGE GRADIENT MAINTENANCE (TYPICAL BOTH SIDES).

3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES A MINIMUM OF THREE FEET OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES INCLUDING SLIP COUPLINGS.

4. DIAMETER OF RIGID PIPE SHALL BE OF ADEQUATE SIZE TO ALLOW FOR THE INSTALLATION OF THE TILE FOR THE FULL LENGTH OF THE RIGID PIPE.

5. OTHER METHODS OF SUPPORTING DRAIN TILE MAY BE USED IF ALTERNATE PROPOSED IS EQUIVALENT IN STRENGTH TO THE CHANNEL/PIPE SECTIONS SHOWN AND IF APPROVED BY COMPANY REPRESENTATIVES AND LANDOWNER IN ADVANCE. SITE SPECIFIC ALTERNATE SUPPORT SYSTEM TO BE DEVELOPED BY COMPANY REPRESENTATIVES AND FURNISHED TO CONTRACTOR FOR SPANS IN EXCESS OF 20', TILE GREATER THEN 10" DIAMETER, AND FOR "HEADER" SYSTEMS.

6. ALL MATERIAL TO BE FURNISHED BY CONTRACTOR.

7. PRIOR TO REPAIRING TILE, CONTRACTOR SHALL PROBE LATERALLY INTO THE EXISTING TILE TO FULL WIDTH OF THE RIGHTS OF WAY TO DETERMINE IF ADDITIONAL DAMAGE HAS OCCURRED. ALL DAMAGED/DISTURBED TILE SHALL BE REPAIRED AS NEAR AS PRACTICABLE TO ITS ORIGINAL OR BETTER CONDITION.

PERMANENT DRAIN TILE REPAIR

Exhibit G

Preliminary Native Pollinator Vegetation Installation and Management Plan

[Attached]

Native Pollinator Vegetation Installation and Management Plan

Heartleaf Solar, LLC

October 2024

Table of Contents

Site Location & Name	Heartleaf Solar, LLC Thayer and Miller Roads, Greenwood Township McHenry County
Site Developer	Trajectory Energy Partners P O Box 310 Highland Park, IL 60035
Vegetation Restoration	Natural Resource Services, Inc 16425 W. State Route 90 Princeville, IL 61559 320.221.8780

The Contribution of Native Habitat on Solar Sites

Economical production of power is the foremost goal on solar sites. There is a parallel opportunity to provide critically important native pollinator friendly habitat throughout the array while capitalizing on the long-term low maintenance needs of native vegetation.

Establishing prairies and other native plant communities within the confines of solar sites provides a tremendous opportunity to restore ecosystems that have been severely degraded and eliminated across all areas of the country.

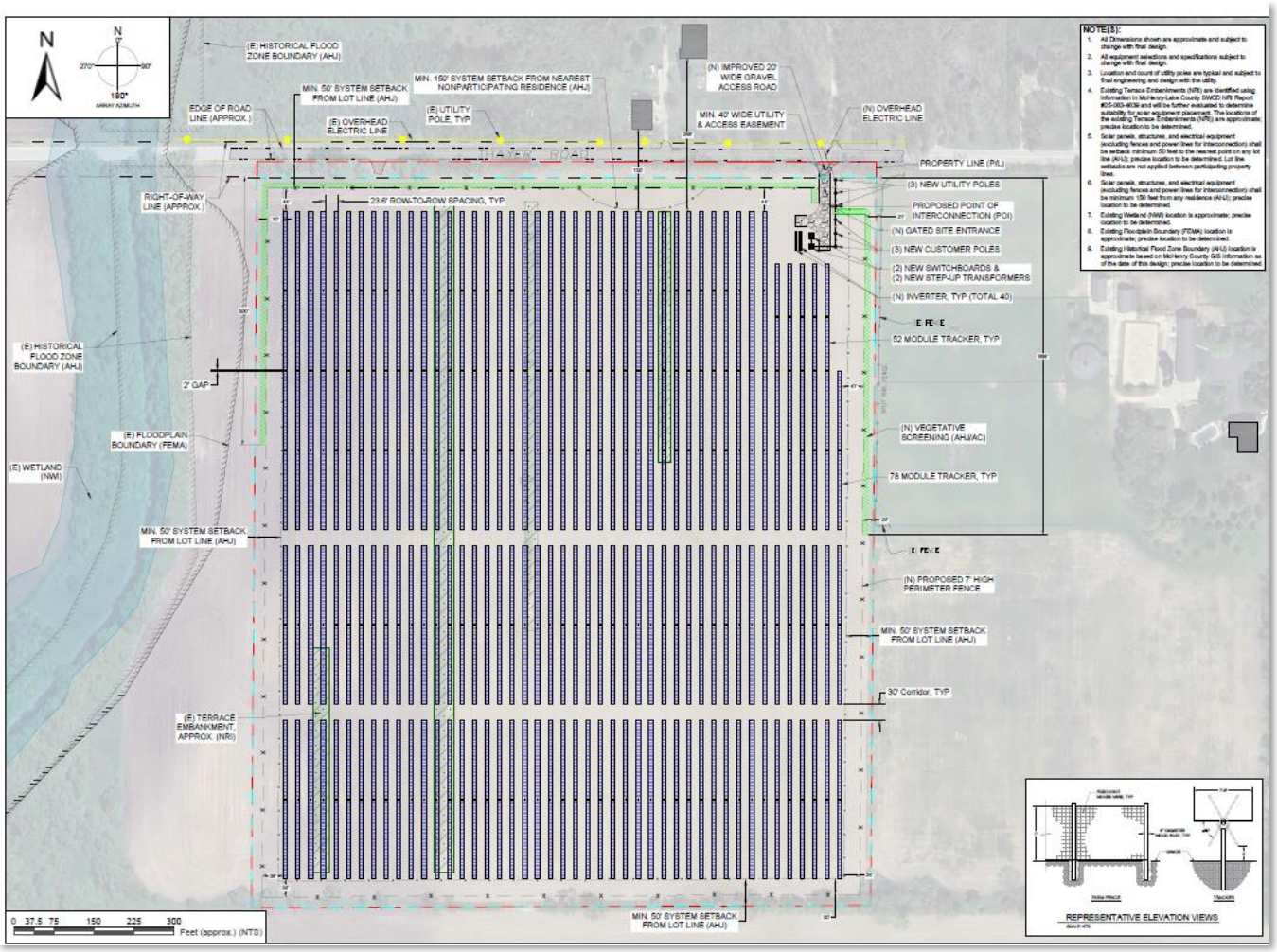
Native plants have profound root systems, many reaching 12 or more feet deep into the soil. Rainwater follows those roots into the ground, helping reduce water runoff and promote the drainage of standing water into the aquafer. Those deep roots also stabilize the soil, preventing erosion from rain and wind. The plants provide seeds for songbirds, cover for game birds and, of course, provide blossoms and host plants for our beloved butterflies and other nectar loving insects.

Native grasses and forbs will be selected based on their ecological appropriateness to the specific conditions of this site, with consideration to their mature height so as to not interfere with panel productivity. These species will not require irrigation, fertilizer or other soil amendments.

The contribution to habitat restoration cannot be overstated given the acreage impacted and lifespan of the project.

A Midwest solar site with three-year-old native pollinator friendly habitat.

Heartleaf Solar, LLC Location and Array Layout



Heartleaf Solar is borderd by Thayer Road to the North and Miller Road to the East, Greenwood Township.

Overview of Heartleaf Solar, LLC

The proposed Heartleaf Solar project is planned as a single axis tracking site on approximately 36 acres of land in Greenwood Township, McHenry County. Project oversight is provided by McHenry County and this plan is written to comply with the Native Vegetation Performance Standards for Solar Farms Memorandum of McHenry County effective on October 8, 2019. A copy of the memorandum is attached as Appendix A.

The land is currently being used agriculturally in typical row crops. The site consists largely of loam, clay loam and fine sandy loam soil types. This is a well-drained site which will readily support the return of native prairie species here.

The native mix planned for this array is selected for ecological appropriateness to these loamy soil types. The species mature within an approximately 30" to 36" height so as to not interfere with panel productivity. The planned native habitat provides vegetation which won't require fertilizer, amended soils or irrigation on this site.

It is important to note that the species selected for this site are based on their ability to successfully establish from seed as well as their ability to thrive within the unique conditions found on solar sites. From a practical standpoint, the species contained in these mixes are generally available in the marketplace and, as whole, have reasonable price points. Ultimately, the list is a combination of well-performing, workhorse species coupled with smaller amounts of more unique species for a robust mixture.

If the site is void of vegetation at beginning of construction, a temporary crop should be seeded to maintain soil stability. Depending on how long the site has remained open following the final harvest and what is growing at the site prior to temporary seeding, an herbicide spray of glyphosate across the site may be needed as part of overall site preparation. Fields very recently used for ag crops typically don't require this herbicide step unless a site was allowed to go fallow for a period of several months.

Vegetative screening may be requested by McHenry County for the north side and portions of the east and west sides. The west side of the site has an existing tree line parallel to the site. The site screening will consist of Tallgrass prairie species and #5 container, 4' tall native shrub species planted 10 feet on center. These shrubs will provide spring and fall forage for songbirds and insects, as well as a natural visual barrier over time.

When construction is completed or at a minimum is reduced to only foot traffic, permanent seeding site prep can begin. All grading must be complete, and the site cleared of debris.

If deemed necessary, the entire site should be sprayed using glyphosate and any additional specific herbicides necessary to eliminate perennial weeds. The exception to this is if a dormant seeding occurs, eliminating the need for an herbicide treatment at that point.

If sprayed, the site should be allowed to stand undisturbed for a minimum of ten days before resuming seeding activities. If broadleaf vegetation is present, a triclopyr herbicide will be added (Garlon 3A or similar). Typical broadleaf herbicides require 30-60 days of undisturbed time, so adequate planning is necessary.

Following the required time, the site is lightly disked and then harrowed. All native seed will be applied using a mechanical broadcast seeder followed by the cover crop of oats or wheat, seasonally determined. Areas inaccessible to equipment will be hand broadcast. The site will be harrowed once again after all seeding is completed.

Maintenance of these sites plays a vital role in the eventual success of any native landscape installation, especially during the establishment period of years one through three. Active management of all areas of the site are similar: all areas of the site are inspected annually followed by maintenance necessary to encourage healthy native species while discouraging non-native/invasive species. During the growing season of the first year of establishment, the site shall be inspected a minimum of three times.

1. During the germination year, the site will be mowed to a height no shorter than 4” to 6” to control annual weed development. This aids in the growth of the prairie seedlings by reducing competition.

   The mowing should finely mulch the plant clippings to prevent smothering young plants.

2. In years following the first growing season, Integrated Vegetation Management (IVM) services are utilized to control annual, biennial and perennial weed species within the developing native landscape. Typical IVM services include spot herbicide spraying, spot mowing, and herbicide wicking.

Site Preparation

1. Inspection of the project area to assess site conditions and determine the need for any site prep mowing or spraying activities.

2. If necessary, an herbicide application will be completed using glyphosate (Round-up® or equivalent) as per manufacturer's directions in areas with actively growing vegetation. Allow a minimum of 10 days before disturbing the soil or completing seeding activities.

3. When perennial broadleaf vegetation is present a triclopyr herbicide will be added (Garlon 3A® or equivalent) as per manufacturer's directions. When a broadleaf herbicide is used allow a minimum of 30 days before disturbing the site or completing seeding.

4. Depending on the type and density of undesirable vegetation present (i.e., annual vs perennial) a complete site mowing might be advisable in lieu of an herbicide application. For instance, if the site is dominated by foxtail (an annual), mowing would be preferrable to an herbicide application.

Seed and Seeding

1. A custom seed mix, located on page 13.

2. Construction debris, garbage and building materials will be removed and/or staged outside the intended seeding areas.

3. Disk soil within the project area in preparation for seeding. Harrow or rake the soil to achieve the proper seedbed.

4. All native seed will be applied using a mechanical broadcast spreader.

5. A cover crop of winter wheat or oats will be seeded along with the native species, seasonally determined.

6. Harrowing will be completed after all grass and cover crop seeding is completed.

Recommended Vegetation Management Procedures

Establishment Phase

Year 1

- Complete site mowings to control annual/biennial weed canopy and prevent production of viable seed.
- 3 mowings are typical depending on soils, weather patterns and planting dates.
- Mowing to be done using specialized zero-radius mowers and/or flail mowers
- Target mowing height of 4-6 inches.
- Project monitoring for erosion; repair/reseed as needed.
- Reporting as per requirements.

Year 2

- Complete site mowing to control annual/biennial weed canopy and prevent production of viable weed seed.
- 3 site visits: 2 mowings likely in the late spring or early summer plus 1 Integrated Vegetation Management (IVM) visit.
- Mowing to be done using specialized zero-radius mowers and/or flail mowers
- Target mowing height of 4-6 inches.
- IVM visits Includes spot mowing, spot herbicide application, herbicide wicking, etc.
- Reporting as per requirements.

Year 3

- Integrated Vegetation Management - 3 IVM site visits are typical depending on growth and weed populations.
- The native habitat will be allowed to mature to its natural height of approximately 30” – 36” subject to seasonal conditions.
- Reporting as per requirements.

Maintenance Phase

Years 4 - 34: Integrated Vegetation Management

- Two IVM site visits are typical depending on vegetation status.
- Equipment used includes tractor and/or ATV mounted sprayers.
- Includes a complete site mowing once every 3 years to mulch up biomass and recycle nutrients. On years when a mowing occurs, only one IVM visit will be necessary.
- Project monitoring for erosion; repair/reseed as needed. Site monitoring.
- Reporting as per requirements.

.

Additional Notes on Vegetation Management

- Establishing a successful native landscape is important but the vegetation also needs to be managed so that the array can function to its full capacity.
- Vegetation management crews will control weed growth underneath the panels only where height is a concern. Mowing/trimming around every post is not necessary from a plant community health standpoint.
- Utilizing herbicide to provide targeted control of unwanted species should only be completed by licensed applicators with a comprehensive knowledge of herbicides, application techniques and species morphology. Applying the correct herbicide with the proper application device at the correct period in the plant's lifecycle is essential to successful control and to minimizing collateral damage.
- Additional mowing or trimming may be needed if shading of the panels occurs, either by native or non-native vegetation. As a general rule, this type of mowing, if needed, should be limited to the areas immediately in front of the panel's lower edge. Mowing the entire aisles would entail potentially mowing flowers in bloom which would defeat the purpose of the pollinator planting.

Monitoring

Consistent monitoring of the project is essential in order to evaluate vegetative establishment, weed presence and possible erosion concerns. This information helps determine which management technique to use, the proper timing of the implementation and whether or not any other remedial action is required. As this site's vegetation matures, adaptive management should be used. Careful management of the project will be required to ensure that right management techniques are implemented in the right areas at the right time.

Annual monitoring and maintenance reports will be submitted to McHenry County as required by the attached Memorandum in Appendix A. Items included on this report, as per McHenry County requirements, shall be submitted to**: plandev@co.mchenry.il.us** and shall include:

- Project name and geographic location
- Map location and description of each plant community present on-site.
- Description of the general condition of each plant community including any issues or deficiencies from the performance standards
- List of all species observed in each plant community, including scientific and common names, based on a minimum of 2 meander searches conducted by an ecologist during the growing season (1 meander search in the spring and 1 in the summer)
- List the 5 most dominant species present in each plant community, estimated based on visual observation during the meander searches, including scientific and common names.
- Review of maintenance activities implemented during the current year being reported.
- Summary of maintenance activities planned for the upcoming year including any "adaptive management" strategies proposed to address issues or to correct deficiencies from the performance standards.
- Color photos representing each plant community and their general condition including any issues observed or deficiencies in performance standards.

Appendix A

McHenry County
Department of Planning and Development
www.co.mchenry.il.us/plandev
OFFICE: McHenry County Admin. Bldg. 667 Ware Road, Woodstock, Illinois
MAIL: 2200 N. Seminary Ave. Woodstock, Illinois 60098
EMAIL: plandev@co.mchenry.il.us
P: 815-334-4560 F: 815-334-4546

MEMORANDUM

REGARDING: Native Vegetation Performance Standards for Solar Farms

FROM: McHenry County Department of Planning and Development

TO: Developers of Solar Farms

DATE: Effective October 8, 2019

In accordance with the McHenry County Unified Development Ordinance, solar farms are required to install and maintain native vegetation on the facility (including beneath and between the panels, but excluding the access road and equipment building). A strip of turfgrass, the width of one commercial mower, or as otherwise required to allow for maneuvering emergency vehicles, may be maintained along the edge of the access road and equipment building. The native vegetation shall meet the performance standards set forth in this document and shall be maintained to those standards throughout the life of the project. The applicable sections of the Unified Development Ordinance include the following portions of Section PP. Solar Farm, 2. Site Design (§16.56.030.PP.2):

Appendix B

Heartleaf Solar
Native Pollinator Friendly Seed Mix

Common Name	Scientific Name	% of Mix	Seeds/ft^2	Total	
Grasses					
Sideoats Grama	Bouteloua curtipendula	35.56%	10.6	4.80	PLS lb
Prairie Brome	Bromus kalmii	1.48%	0.6	0.20	PLS lb
June Grass	Koeleria macrantha	0.37%	3.7	0.05	PLS lb
Plains Oval Sedge	Carex brevior	0.74%	1.1	0.10	PLS lb
Bicknell's Sedge	Carex bicknellii	1.48%	1.2	0.20	PLS lb
Silky Wild Rye	Elymus villosus	2.00%	0.5	0.27	PLS lb
Little Bluestem	Schizachyrium scoparium	32.07%	23.9	4.33	PLS lb
Prairie Dropseed	Sporobolus heterolepis	0.37%	0.3	0.05	PLS lb
Forbs					
Common Yarrow	Achillea millefolium	0.33%	2.9	0.05	PLS lb
Nodding Onion	Allium cernuum	0.22%	0.1	0.03	PLS lb
Lead Plant	Amorpha canescens	1.28%	1.0	0.17	PLS lb
Canada Anemone	Anemone canadensis	0.06%	0.0	0.01	PLS lb
Wild Columbine	Aquilegia canadensis	0.13%	0.2	0.02	PLS lb
Common Milkweed	Asclepias syriaca	0.09%	0.0	0.01	PLS lb
Butterfly Milkweed	Asclepias tuberosa	0.22%	0.0	0.03	PLS lb
Canada Milkvetch	Astragalus canadensis	1.00%	0.8	0.14	PLS lb
Partridge Pea	Chamaecrista fasciculata	1.93%	0.3	0.26	PLS lb
Lanceleaf Coreopsis	Coreopsis lanceolata	2.96%	2.9	0.40	PLS lb
White Prairie Clover	Dalea candida	4.00%	3.8	0.54	PLS lb
Purple Prairie Clover	Dalea purpurea	5.40%	4.8	0.73	PLS lb
Pale Purple Coneflower	Echinacea pallida	0.74%	0.2	0.10	PLS lb
Wild Lupine	Lupinus perennis	0.36%	0.0	0.05	PLS lb
Spotted Bee Balm	Monarda punctata	0.07%	0.3	0.01	PLS lb
Virginia Mountain Mint	Pycnanthemum virginianum	0.04%	0.5	0.01	PLS lb
Black-eyed Susan	Rudbeckia hirta	1.78%	8.1	0.24	PLS lb
Gray Goldenrod	Solidago nemoralis	0.12%	1.8	0.02	PLS lb
Calico Aster	Symphyotrichum lateriflorum	0.12%	1.5	0.02	PLS lb
Sky Blue Aster	Symphyotrichum oolentangiense	0.28%	1.1	0.04	PLS lb
Ohio Spiderwort	Tradescantia ohiensis	0.37%	0.1	0.05	PLS lb
Hoary Vervain	Verbena stricta	1.83%	2.5	0.25	PLS lb
Golden Alexanders	Zizia aurea	2.59%	1.4	0.35	PLS lb

Seeding rate: 13.5 lbs./acre (76.4 seeds per square foot)

Illinois Solar Site Pollinator Habitat Planning Form

Use this form as a draft before completing the *Illinois Planned Pollinator Habitat on Solar Sites Scorecard* online

In Between and Under Solar Panels

1. PLANNED PLANT DIVERSITY IN ROWS & UNDER SOLAR ARRAY (choose up to 2)
   - ☐ 4-6 species +5 pts
   - ☐ 7 or More species +8 pts
   - ☑ All Native Species (minimum 4 species) +10 pts

Perimeter and Buffer Area

2. VEGETATIVE BUFFER PLANNED ADJACENT TO THE SOLAR SITE (choose all that apply)
   - ☑ Buffer planned outside of array fencing +5 pts
   - ☐ Buffer is 30-49ft wide measured from array fencing +5 pts
   - ☑ Buffer is at least 50ft wide measured from array fencing +10 pts
   - ☑ Buffer has Native shrubs/trees that provide food for wildlife +5 pts

3. SEEDS USED FOR NATIVE PERIMETER & BUFFER AREAS (choose all that apply)
   - ☑ Mixes are seeded using at least 20 seeds per square foot of Pure Live Seed or 40 Seeds per square foot on slopes > 5% +10 pts
   - ☐ All seeds are from a source within 150 miles of site +5 pts
   - ☐ At least 2% milkweed cover is planned to be established from seeds/plants +5 pts

4. PLANNED # OF NATIVE SPECIES IN SITE PERIMETER & BUFFER AREA (species with more than 1% cover)(choose 1)
   - ☐ 5-10 species +2 pts
   - ☑ 10-15 species +5 pts
   - ☐ 16-20 species +10 pts
   - ☐ >20 species +15 pts

Exclude invasive and non-native plant species from total

5. PLANNED PERCENT OF PERIMETER & BUFFER AREA DOMINATED BY NATIVE PLANT SPECIES (choose 1)
   - ☐ 26- 50 % +2 pts
   - ☐ 51-75 % +10 pts
   - ☑ More than 75% +15 pts

Whole Site

6. PLANNED PERCENT OF SITE VEGETATION COVER TO BE DOMINATED BY DESIRABLE WILDFLOWERS (choose 1)
   - ☑ 26- 50 % +2 pts
   - ☐ 51-75 % +10 pts
   - ☐ More than 75% +15 pts

7. PLANNED SEASONS WITH AT LEAST THREE BLOOMING NATIVE SPECIES PRESENT (choose all that apply)
   - ☑ Spring (April-May) +5 pts
   - ☑ Summer (June-August) +5 pts
   - ☑ Fall (September-October) +5 pts

8. HABITAT SITE PREPARATION PRIOR TO IMPLEMENTATION (choose all that apply)
   - ☑ Soil preparation done to promote germination and reduce erosion as appropriate for the site. +10 pts
   - ☑ Measures taken to control weeds prior to seeding +10 pts
   - ☐ None -10 pts

9. AVAILABLE HABITAT COMPONENTS WITHIN 0.25 MILES (choose all that apply)
   - ☑ Native bunch grass for bee nesting +2 pts
   - ☑ Native trees/shrubs for bee nesting +2 pts
   - ☐ Clean, perennial water sources +2 pts
   - ☐ Created habitat nesting features +2 pts

10. SITE PLANNING AND MANAGEMENT(choose all that apply)
    - ☑ Detailed establishment and management plan developed +10 pts
    - ☐ Signage legible at forty or more feet stating "pollinator friendly solar habitat" +3 pts

11. INSECTICIDE RISK (choose all that apply)
    - ☐ Planned on-site use of insecticide or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc.) -40 pts
    - ☐ Communication/registration with local chemical applicators or on www.fieldwatch.com to prevent drift +5 pts

Total Points: 111

Meets Preliminary Pollinator Standards - 85
Provides Exceptional Habitat - 110 and higher

Owner: Heartleaf Solar, LLC
Vegetation Consultant: Natural Resource Services, Inc; ch10.24
Project Location: Greenwood Township, McHenry Co
Project Size: Approx 36 acres acres
Final Seeding Date: TBD Fall 2025

This form is designed (with the help of the Solar Site Pollinator Guidelines found on IDNR's website) to guide owners or managers of solar sites to meet the requirements to be able to claim a site is pollinator friendly according to the "Pollinator Friendly Solar Site Act (525 ILCS 55)". This form is for company records only and does not grant the title of a Pollinator Friendly Solar Site until the "Illinois Planned Pollinator Habitat on Solar Sites Scorecard" is completed with a score of 85 or higher on IDNR's website. This preliminary recognition is good for 3yrs, after which the "Established Pollinator Habitat on Solar Sites Scorecard" will need to be completed every 5 years to maintain recognition as a Pollinator Friendly Solar Site.

12/3/2019

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Natural Resource Services

This information has been provided by Natural Resource Services, Inc.
www.naturalresourceservice.com
2885 Quail Road NE, Sauk Rapids MN

N

N
0°
270°
90°
180°
ARRAY AZIMUTH

(E) HISTORICAL FLOOD ZONE BOUNDARY (AHJ)

MIN. 150' SYSTEM SETBACK FROM NEAREST NONPARTICIPATING RESIDENCE (AHJ)

(N) IMPROVED 20' WIDE GRAVEL ACCESS ROAD

MIN. 50' SYSTEM SETBACK FROM LOT LINE (AHJ)

EDGE OF ROAD LINE (APPROX.)

(E) OVERHEAD ELECTRIC LINE

(E) UTILITY POLE, TYP

MIN. 40' WIDE UTILITY & ACCESS EASEMENT

(N) OVERHEAD ELECTRIC LINE

288'

THAYER ROAD

PROPERTY LINE (P/L)

155'

(3) NEW UTILITY POLES

RIGHT-OF-WAY LINE (APPROX.)

44'

23.6' ROW-TO-ROW SPACING, TYP

64'

44'

PROPOSED POINT OF INTERCONNECTION (POI)

30'

31'

(N) GATED SITE ENTRANCE

(3) NEW CUSTOMER POLES

(2) NEW SWITCHBOARDS & (2) NEW STEP-UP TRANSFORMERS

(N) INVERTER, TYP (TOTAL 40)

500'

(E) FENCE

52 MODULE TRACKER, TYP

(E) HISTORICAL FLOOD ZONE BOUNDARY (AHJ)

668'

2' GAP

41'

SPLIT RAIL FENCE

(N) VEGETATIVE SCREENING (AHJ/AC)

(E) FLOODPLAIN BOUNDARY (FEMA)

(E) WETLAND (NWI)

78 MODULE TRACKER, TYP

23'

(E) FENCE

MIN. 50' SYSTEM SETBACK FROM LOT LINE (AHJ)

(N) PROPOSED 7' HIGH PERIMETER FENCE

MIN. 50' SYSTEM SETBACK FROM LOT LINE (AHJ)

30' Corridor, TYP

(E) TERRACE EMBANKMENT, APPROX. (NRI)

39'

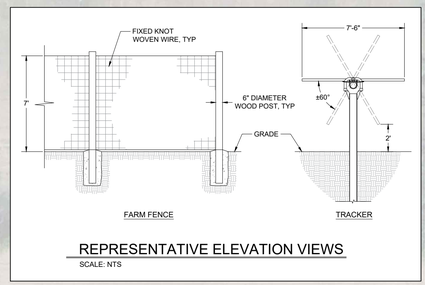
34'

34'

30'

MIN. 50' SYSTEM SETBACK FROM LOT LINE (AHJ)

0 37.5 75 150 225 300
Feet (approx.) (NTS)



REPRESENTATIVE ELEVATION VIEWS
SCALE: NTS

NOTE(S):

1. All Dimensions shown are approximate and subject to change with final design.
2. All equipment selections and specifications subject to change with final design.
3. Location and count of utility poles are typical and subject to final engineering and design with the utility.
4. Existing Terrace Embankments (NRI) are identified using information in McHenry-Lake County SWCD NRI Report #25-083-4639 and will be further evaluated to determine suitability for solar equipment placement. The locations of the existing Terrace Embankments (NRI)) are approximate; precise location to be determined.
5. Solar panels, structures, and electrical equipment (excluding fences and power lines for interconnection) shall be setback minimum 50 feet to the nearest point on any lot line (AHJ); precise location to be determined. Lot line setbacks are not applied between participating property lines.
6. Solar panels, structures, and electrical equipment (excluding fences and power lines for interconnection) shall be minimum 150 feet from any residence (AHJ); precise location to be determined.
7. Existing Wetland (NWI) location is approximate; precise location to be determined.
8. Existing Floodplain Boundary (FEMA) location is approximate; precise location to be determined.
9. Existing Historical Flood Zone Boundary (AHJ) location is approximate based on McHenry County GIS information as of the date of this design; precise location to be determined.

Trajectory Energy Partners

Project Name:
Heartleaf Solar, LLC

Drawing Designation:
Conditional Use Permit Design

Project County:
McHenry County

Facility Location:
42.41220°N, -88.39942°W

SYSTEM DETAILS
(Preliminary)

SITE AREA	36.31 +/- acres (approx.)
DC SYSTEM SIZE	7,746 kW
AC SYSTEM SIZE	5,000 kW
DC/AC RATIO	1.55
POCC/POI VOLTAGE	34.5 kV
ROW SPACING (GCR)	23.6' (32%)
RACKING SYSTEM	Single-Axis Tracking
MODULE TILT	-60° to 60°
ARRAY AZIMUTH	180°
PV MODULES	
MANUFACTURER	Jinko Solar
MODEL	JKM 560N-72HL4-BDV
DC POWER @ STC	560 W
MAX DC SYS. VOLTAGE	1500 V
MODULES PER STRING	26
MODULE COUNT	13,832
INVERTERS	
MANUFACTURER	Yaskawa Solectria Solar
MODEL	XGI 1500-125
NOMINAL POWER	125 kW
INVERTER COUNT	40

LEGEND

- Property Line
- Site Area Boundary
- System Setback Line
- (N) Proposed 7' High Perimeter Fence
- (N) Underground Medium Voltage Line
- (N) Overhead Medium Voltage Line
- (E) Overhead Electric Line
- (E) Utility Pole
- (N) Improved 20' Wide Gravel Access Road
- (N) Vegetative Screening (AHJ/AC)
- (E) Residences
- Edge of Road Line
- Right-of-Way Line
- (E) Terrace Embankment (NRI)
- (E) Wetlands (NWI)
- (E) Floodplain Boundary (FEMA)
- (E) Historical Flood Zone Boundary (AHJ)
- (E) Fence
- (N) Solar PV Module
- (N) Inverter Rack
- (N) Transformer
- (N) Utility/Customer Pole

PRELIMINARY
NOT FOR CONSTRUCTION

Revision:	Date:
A-2	10/29/2024
Drawn:	**Checked:**
Justin H.	Molly S.

ARCH D SIZE - 24"x36"

McHENRY-LAKE COUNTY SOIL & WATER CONSERVATION DISTRICT

NATURAL RESOURCES INFORMATION REPORT

24-083-4639

September 25, 2024

This report has been prepared for:
Heartleaf Solar, LLC

Contact Person:
Mack Gapinski

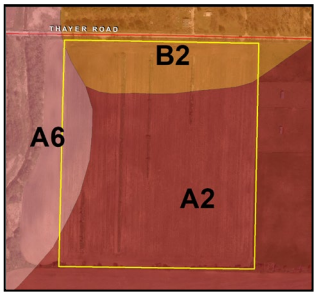
PREPARED BY:
McHENRY-LAKE COUNTY SOIL & WATER CONSERVATION DISTRICT
1648 S. EASTWOOD DR.
WOODSTOCK, IL 60098
PHONE: (815) 338-0444
www.mchenryswcd.org

The McHenry-Lake County Soil & Water Conservation District is an equal opportunity provider and employer.

EXECUTIVE SUMMARY OF NRI REPORT #24-083-4639

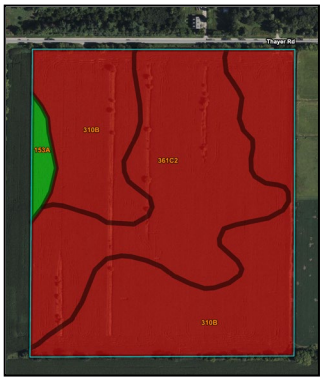
It is the opinion of the McHenry-Lake County Soil and Water Conservation District Board of Directors that this report as summarized on these pages are pertinent to the requested zoning change.

Groundwater Contamination Potential and Recharge Areas:



Aquifer Sensitivity Map (*This is the area beneath the soil profile down to bedrock)
The Geologic features map indicates the parcel is comprised of 26.01 acres of A2, 3.11 acres of A6, and 7.49 acres of B2 geologic limitations. A2 and A6 have a high contamination potential and B2 has a moderately-high contamination potential.

Sensitive Aquifer Recharge Areas (Includes the soil profile and underlying geology).
The Sensitive Aquifer Recharge Map indicates 18.87 acres of the parcel is within a Sensitive Aquifer Recharge Area (identified in red).



Soil Leachability Map (This is only the soil profile within the parcel from the surface down to approx. 5 feet).
The Soil Leachability Index 35.7 acres or 97.5% of the parcel has high leaching potentials identified (identified in red).

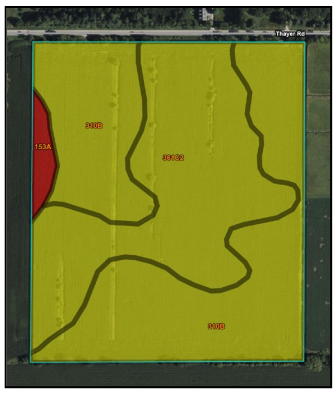
Soil Permeability (This is only the soil profile within the parcel from the surface down to approx. 5 feet. Soil permeability is a reflection of the speed in which water (with or without pollutants) can move through the soil profile.)
The USDA-NRCS Soil Survey Map of the area indicates there are no highly permeable soils on the parcel.

Soil Limitations (This evaluates the parcel from the surface down to approximately 5 feet.):

Erosion Ratings
The NRCS Soils Survey indicates 15.2 acres or 41.4% of the parcel contains Highly Erodible Soils. The McHenry-Lake SWCD has staff members certified in Sediment and Erosion Control and can aid the petitioner by reviewing erosion control plans and make recommendations.

Prime Farmland Soils
The Natural Resources Conservation Service (NRCS) Soil Survey indicates 35.7 acres or 97.5% of the parcel is comprised of prime farmland soils (identified in green) and 0.9 acres or 2.5% of the parcel is comprised of prime farmland if drained soils (identified in light green).

Hydric Soils
The NRCS Soil Survey identifies 0.9 acres or 2.5% of hydric soils (identified in orange) on the parcel.



Ground Based Solar Arrays
The NRCS Soils Survey indicates 0.9 acres or 2.5% of the parcel has severe limitations for Soil Anchored Solar Arrays (identified in red). The reason for the limitation can be found on page 23 of the report.

Floodplain Information:

The Flood Insurance Rate Map
The map indicates the parcel is outside of the 100-year floodplain.

Flood of Record Map (Hydrologic Atlas)
The Flood of Record Map for this area indicates the parcel has no previously flooded.

Wetland Information:

USDA-NRCS Wetland Inventory
The NRCS Wetlands Inventory indicates there are no wetlands on the parcel.

ADID Wetland Inventory
The ADID study indicates there are no wetlands on the parcel.

Cultural Resources: Office maps indicate there is a high probability for cultural resources within the parcel.

Preserved or Recognized Ecological Sites: Office maps indicate there are no designated Natural Areas within 500 feet of the parcel.

Woodlands: None identified.

Agricultural Areas: Office Maps indicate there are no State designated agricultural area on the parcel.

Land Evaluation Site Assessment (LESA): The Land Evaluation Score for the parcel is 74.4. A Site Assessment was not completed.

ADDITIONAL CONCERNS

There are 4 terraces that cross the property in a north to south alignment. A terrace is an earth embankment or a combination ridge and channel, constructed across the field slope. The purpose of this conservation practice is to reduce erosion, trap sediment, manage runoff, and conserve soil moisture. Typically terrace systems contain an outlet which is either vegetated or underground via a tile system. Care should be exercised around the terraces to ensure any tile system is not impacted by the proposed development. Impacts can result in the terrace system's failure.

It is recommended that areas between panels and within the buffers, should be planted to a native prairie mix to help increase water infiltration and reduce runoff from the site. It is recommended that a planting and maintenance plan be developed with the landowner to ensure that noxious weeds are controlled, and native plantings are properly installed and managed. The petitioner is encouraged to add pollinator species to this planting plan in accordance with the Illinois Department of Natural Resources and McHenry County requirements.

We have not received notification that an Agriculture Mitigation Agreement with the Illinois Department of Agriculture has been completed. The agreement should address decommissioning of the site after the lifespan of the facility has been reached. It is recommended that all panels, piles, transformers, underground lines, and fencing be completely removed from the site. If underground lines are to remain, they should have at least 5 feet of cover to adequately allow farming operations to commence after the facility's removal. A template can be found on the Illinois Department of Agriculture's website. Please contact Jeffrey Evers for more information.

JEFFREY EVERS | AGRICULTURAL LAND & WATER RESOURCE SPECIALIST III
Land and Water Resources

Illinois Department of Agriculture
John R. Block Building | 801 E. Sangamon Ave., P.O. Box 19281 | Springfield, IL 62794-9281
(O) 217-785-5594 | (F) 217-557-0993 | (TTY) 866-287-2999 | jeff.evers@illinois.gov

NATURAL RESOURCE INFORMATION REPORT (NRI)

NRI Report Number	24-083-4639
Applicant's Name	Heartleaf Solar, LLC
Size of Parcel	37 acres
Zoning Change	A-1 to Commercial Solar Facility
Parcel Index Number(s)	08-03-200-006, 08-03-200-007, 08-03-200-008, 08-03-200-023, 08-03-200-028
Common Location	Undefined
Contact Person	Mack Gapinski

Copies of this report or notification of the proposed land-use change were provided to:	***yes***	***no***
The Applicant/Contact Person	x	
The Village/City/County Planning and Zoning Department or Appropriate Agency	x	

Report Prepared By: *Spring M. Duffey* Position: *Executive Director*

Contents *Page*

PURPOSE AND INTENT

The purpose of this report is to inform officials of the local governing body and other decision-makers with natural resource information. This information may be useful when undertaking land use decisions concerning variations, amendments or relief of local zoning ordinances, proposed subdivision of vacant or agricultural lands and the subsequent development of these lands. This report is a requirement under Section 22.02a of the Illinois Soil and Water Conservation Districts Act.

The intent of this report is to present the most current natural resource information available in a readily understandable manner. It contains a description of the present site conditions, the present resources, and the potential impacts that the proposed change may have on the site and its resources. The natural resource information was gathered from standardized data, on-site investigations and information furnished by the petitioner. This report must be read in its entirety so that the relationship between the natural resource factors and the proposed land use change can be fully understood.

Due to the limitations of scale encountered with the various resource maps, the property boundaries depicted in the various exhibits in this report provide a generalized representation of the property location and may not precisely reflect the legal description of the PIQ (Parcel in Question).

This report, when used properly, will provide the basis for proper land use change decisions and development while protecting the natural resource base of the county. It should not be used in place of detailed environmental and/or engineering studies that are warranted under most circumstances, but in conjunction with those studies.

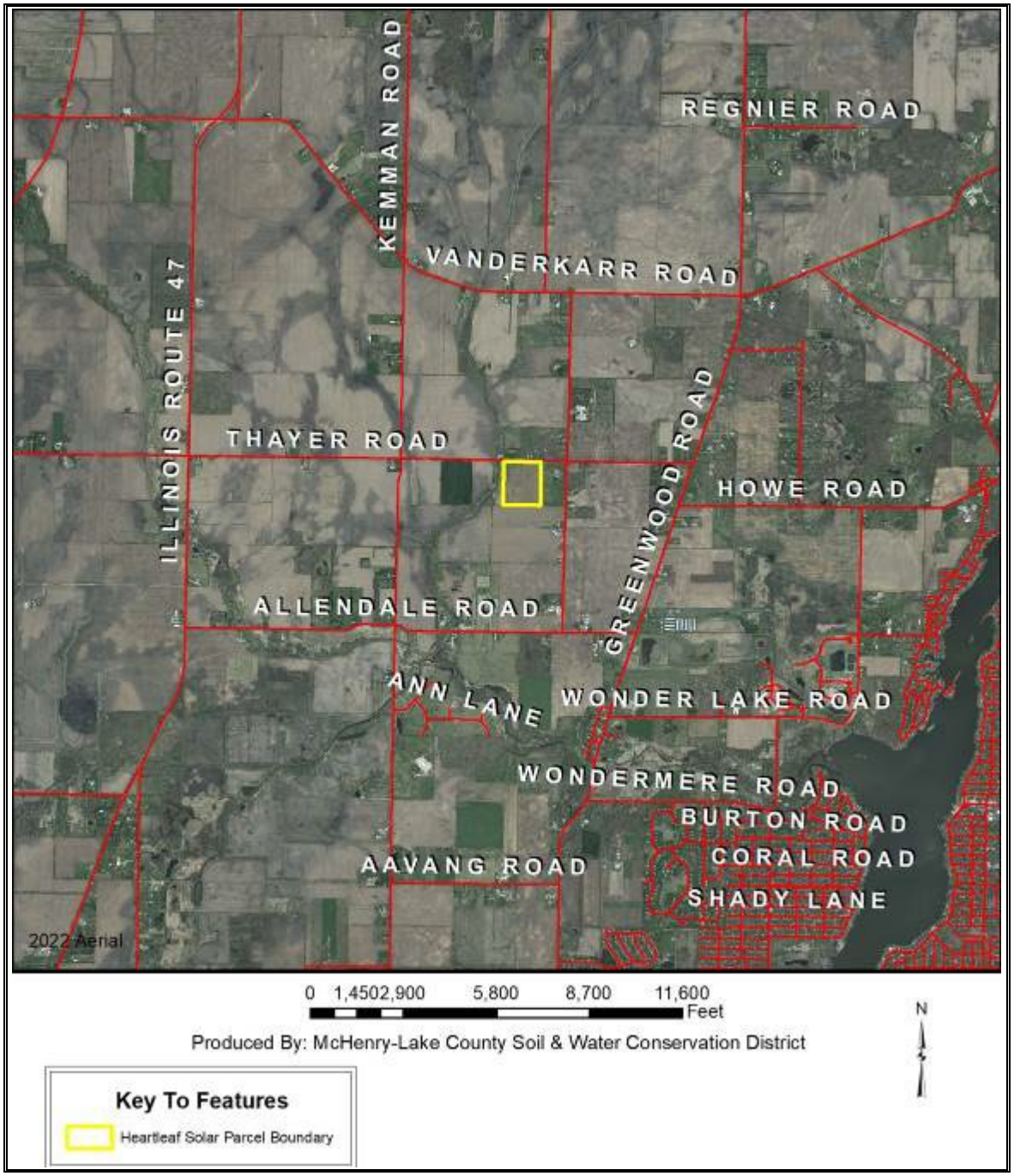
The conclusions of this report in no way indicate that a certain land use is not possible, but it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Any questions on the technical data supplied in this report or if anyone feels that they would like to see more additional specific information to make the report more effective, please contact:

McHenry-Lake County Soil & Water Conservation District
1648 S. Eastwood Dr.
Woodstock, IL 60098
Phone: (815) 338-0444 ext. 3
www.mchenryswcd.org
E-mail: Spring.Duffey@il.nacdnet.net

PARCEL LOCATION

Location Map for Natural Resources Information Report # 24-083-4639

In the Northeast Quarter of Section 3, Township 45 North, Range 7 East on 37 acres. This parcel is located on the south side of Thayer Road, west of the intersection of Thayer Road and Miller Road, McHenry County, IL.



ARCHAEOLOGIC/CULTURAL RESOURCES

Simply stated, cultural resources are all the past activities and accomplishments of people. They include the following: buildings; objects made or used by people; locations; and less tangible resources, such as stories, dance forms, and holiday traditions. The Soil and Water Conservation District most often encounters cultural resources as historical properties. These may be prehistoric or historical sites, buildings, structures, features, or objects. The most common type of historical property that the Soil and Water Conservation District may encounter is non-structural archaeological sites. These sites often extend below the soil surface, and must be protected against disruption by development or other earth moving activity if possible. Cultural resources are *non-renewable* because there is no way to "grow" a site to replace a disrupted site.

Landowners with historical properties on their land have ownership of that historical property. However, the State of Illinois owns all of the following: human remains, grave markers, burial mounds, and artifacts associated with graves and human remains.
Non-grave artifacts from archaeological sites and historical buildings are the property of the landowner. The landowner may choose to disturb a historical property, but may not receive federal or state assistance to do so. If an earth moving activity disturbs human remains, the landowner must contact the county coroner within 48 hours.

Office maps indicate there is a high probability for cultural resources within the parcel.

ECOLOGICALLY SENSITIVE AREAS

What is Biological Diversity and Why Should it be Conserved?[1]

Biological diversity, or biodiversity, is the range of life on our planet. A more thorough definition is presented by botanist Peter H. Raven: "At the simplest level, biodiversity is the sum total of all the plants, animals, fungi and microorganisms in the world, or in a particular area; all of their individual variation; and all of the interactions between them. It is the set of living organisms that make up the fabric of the planet Earth and allow it to function as it does, by capturing energy from the sun and using it to drive all of life's processes; by forming communities of organisms that have, through the several billion years of life's history on Earth, altered the nature of the atmosphere, the soil and the water of our Planet; and by making possible the sustainability of our planet through their life activities now." (Raven 1994)

[1]Taken from *The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunities*, prepared by the Nature Conservancy Great Lakes Program 79W. Monroe Street, Suite 1309, Chicago, IL 60603, January 1994

It is not known how many species occur on our planet. Presently, about 1.4 million species have been named. It has been estimated that there are perhaps 9 million more that have not been identified. What is known is that they are vanishing at an unprecedented rate. Reliable estimates show extinction occurring at a rate several orders of magnitude above "background" in some ecological systems. (Wilson 1992, Hoose 1981)

The reasons for protecting biological diversity are complex, but they fall into four major categories.

First, loss of diversity generally weakens entire natural systems. Healthy ecosystems tend to have many natural checks and balances. Every species plays a role in maintaining this system. When simplified by the loss of diversity, the system becomes more susceptible to natural and artificial perturbations. The chances of a system-wide collapse increase. In parts of the midwestem United States, for example, it was only the remnant areas of natural prairies that kept soil intact during the dust bowl years of the 1930s. (Roush 1982)

Simplified ecosystems are almost always expensive to maintain. For example, when synthetic chemicals are relied upon to

control pests, the target species are not the only ones affected. Their predators are almost always killed or driven away, exasperating the pest problem. In the meantime, people are unintentionally breeding pesticide-resistant pests. A process has begun where people become perpetual guardians of the affected area, which requires the expenditure of financial resources and human ingenuity to keep the system going.

A second reason for protecting biological diversity is that it represents one of our greatest untapped resources. Great benefits can be reaped from a single species. About 20 species provide 90% of the world's food. Of these 20, just three, wheat, maize and rice-supply over one half of that food. American wheat farmers need new varieties every five to 15 years to compete with pests and diseases. Wild strains of wheat are critical genetic reservoirs for these new varieties.

Further, every species is a potential source of human medicine. In 1980, a published report identified the market value of prescription drugs from higher plants at over $3 billion. Organic alkaloids, a class of chemical compounds used in medicines, are found in an estimated 20% of plant species. Yet only 2% of plant species have been screened for these compounds. (Hoose 1981)

The third reason for protecting diversity is that humans benefit from natural areas and depend on healthy ecosystems. The natural world supplies our air, our water, our food and supports human economic activity. Further, humans are creatures that evolved in a diverse natural environment between forest and grasslands. People need to be reassured that such places remain. When people speak of "going to the country," they generally mean more than getting out of town. For reasons of their own sanity and well being, they need a holistic, organic experience. Prolonged exposure to urban monotony produces neuroses, for which cultural and natural diversity cure.

Historically, the lack of attention to biological diversity, and the ecological processes it supports, has resulted in economic hardships for segments of the basin's human population.

The final reason for protecting biological diversity is that species and natural systems are intrinsically valuable. The above reasons have focused on the benefits of the natural world to humans. All things possess intrinsic value simply because they exist.

Biological Resources Concerning the Subject Parcel

As part of the Natural Resources Information Report, staff checks office maps to determine if any nature preserves are within 500 feet of the parcel in question. If there is a nature preserve in the area, then that resource will be identified as part of the report. The SWCD recommends that every effort be made to protect that resource. Such efforts should include, but are not limited to erosion control, sediment control, stormwater management, and groundwater monitoring.

Office maps indicate there are no designated Natural Areas within 500 feet of the parcel.

WOODLANDS

The McHenry County Conservation District's Remnant Oak Woodland Study does not identify any oak woodlands on the parcel.

Native woodlands are no longer a common occurrence throughout much of McHenry County. Although forests originally covered nearly 40% of Illinois, today only about 12% of the state is forested, with most of this being secondary growth (Ill. Natural History Survey Reports, Nov/Dec 1993, No. 324). The composition of Illinois forests has changed markedly over the past three decades. 97% of the timberland is classified as hardwood forest. The forest acreage continues to increase from 4.2 million acres in 1985 to 4.3 million acres in 1998. (IL Forest Development Council News, IL DNR, Winter 2001/Volume 2, No. 1). Oak-hickory forests, which had made up half of the acreage, have declined by 14%, and make up 2.1 million acres. This decline is largely a result of wildfire suppression that allows maples to take over. Thus, the acres of maple-beech forest have risen more than 40-fold from 1962 to 1985, to one quarter of the total forest area, 696 thousand acres. Dutch elm disease and the conversion of forested bottomlands to agriculture have resulted in huge declines in the elm-ash-cottonwood forests, 906 thousand acres, falling from one third - one sixth of the Illinois forest area. Elm accounts for the greatest number of individual trees – 412 million. Other species groups with more than 100 million trees include hickory, red oak, sugar/black maple, ash, hackberry, and black cherry.

Woodlands provide many benefits such as wildlife habitat, erosion control, air and water quality improvements, and aesthetic values. Forests are responsible for much of the biological diversity in the state. Many species are dependent upon forests for food & shelter, including threatened/endangered species.

One of the most serious problems facing Illinois forests is the invasion of exotic plants and animals. Some of the most damaging plants includes European buckthorn, multiflora rose, honeysuckle, purple loosestrife, and garlic mustard.

Many trees, particularly hardwoods (especially oaks) are extremely sensitive to construction-induced disturbances. The area most susceptible to damage is within the "drip radius," the ground surface directly beneath the leafy canopy of the tree. Many trees have an extensive system of feeder roots, located within one foot of the surface, and supply the tree with the majority of its moisture and nutrient needs.

Construction activities can negatively impact trees in several different ways. Earth-moving activities that stockpile soil near trees can suffocate tree roots that, although buried, require oxygen. Vehicle traffic can compact the soil to a point where the roots no longer function effectively. Grading activities for road cuts and foundations can cause a localized drop in the water table, placing the trees under stress. The placement of pavement or stormwater management facilities near established trees can also radically change soil moisture. The removal of the accumulated organic materials normally present on a woodland floor, and the subsequent establishment of turf lawns, can drastically affect the soil temperature and nutrient balance. Injury to the bark of a tree can increase the chance of the tree being subjected to a potentially harmful disease.

If existing trees are to be maintained in a healthy state, the appropriate planning is necessary. Someone with a working knowledge of forestry should assess existing trees to determine which trees should be protected. Some tree species are not considered desirable due to their aggressive growth, behavior, and limited value to local wildlife. Proper management of woodlands and open space includes the selective elimination of such trees and replacement by more desirable species. **Trees that are to be saved should be marked and protected with snow fencing or similar material, installed around the drip radius, to prevent root damage,** and vehicle traffic should be minimized around the drip line. Contractors should be informed of the intention to preserve trees and be expected to conduct their work accordingly.

Tree damage resulting from construction activities may not be apparent for a number of years. While it is recognized that some tree loss

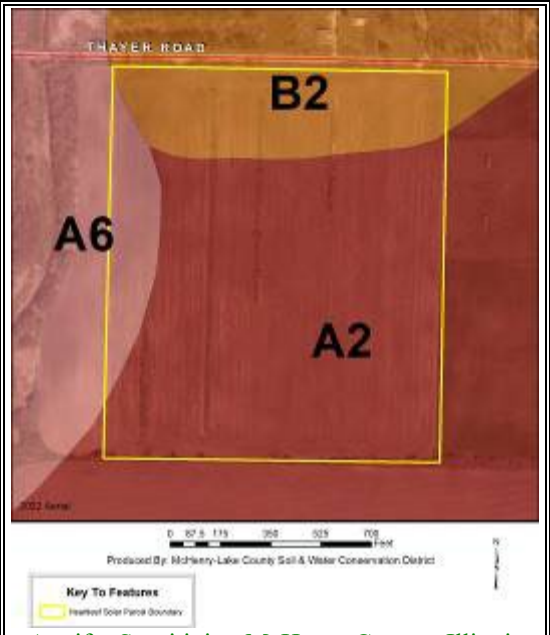
is unavoidable, this should be minimized to the extent possible. It is highly recommended that trees lost to development activity be replaced by younger specimens of the native trees now found on the PIQ.

GEOLOGIC INFORMATION

Geology and the Proposed Land Use

As density of septic systems increases, the concern for pollution potential of local groundwater rises. Local geology plays an important role in determining the pollution potential. Groundwater pollution potential is an important factor when determining a specific area's suitability for a given land use. The local geology, is an important element of the natural resource base. This information, when compared to soils information, gives a clearer picture of conditions on this parcel.

Geological data comes from the Illinois State Geological Survey Circular 559, *Geologic Mapping for Environmental Planning, McHenry County, Illinois.*



Aquifer Sensitivity, McHenry County, Illinois (e.g., septic systems) (Vaiden et al.)

The Geologic features map indicates the parcel is comprised of 26.01 acres of A2, 3.11 acres of A6 and 7.49 acres of B2 geologic limitations.

A-2: Geologic limitations. The potential for contaminating shallow aquifers is high. In these areas, contaminants from any source can move rapidly through these sand and gravel deposits to wells or nearby streams. In addition, this thick surficial aquifer is commonly hydraulically connected to underlying aquifers (Berg 1994). Land-use practices should be very conservative in all areas mapped as unit A. (Curran et al 1997) (Contains less than 20 feet Haeger sandy diamicton overlying Henry sand and gravel greater than 50 feet thick.

A-6: Geologic limitations. The potential for contaminating shallow aquifers is high. In these areas, contaminants from any source can move rapidly through these sand and gravel deposits to wells or nearby streams. In addition, this thick surficial aquifer is commonly hydraulically connected to underlying aquifers (Berg 1994). Land-use practices should be very conservative in all areas mapped as unit A. (Curran et al 1997) (Contains less than 20 feet fine-grained materials overlying greater than 50 feet Henry sand and gravel.)

B-2: Geologic limitations. The potential for contamination is moderately high. Groundwater in these thin sand and gravel deposits is not commonly tapped for water resource; however, contaminated groundwater may flow into aquifers of adjoining units, or it may migrate through the sand and gravel, especially along the contact with underlying fine-grained deposits, and discharge on slopes or into surface-water bodies. (Contains less than 20 feet Henry sandy diamicton overlying less than 20 feet Henry sand and gravel.)

SENSITIVE AQUIFER RECHARGE AREAS

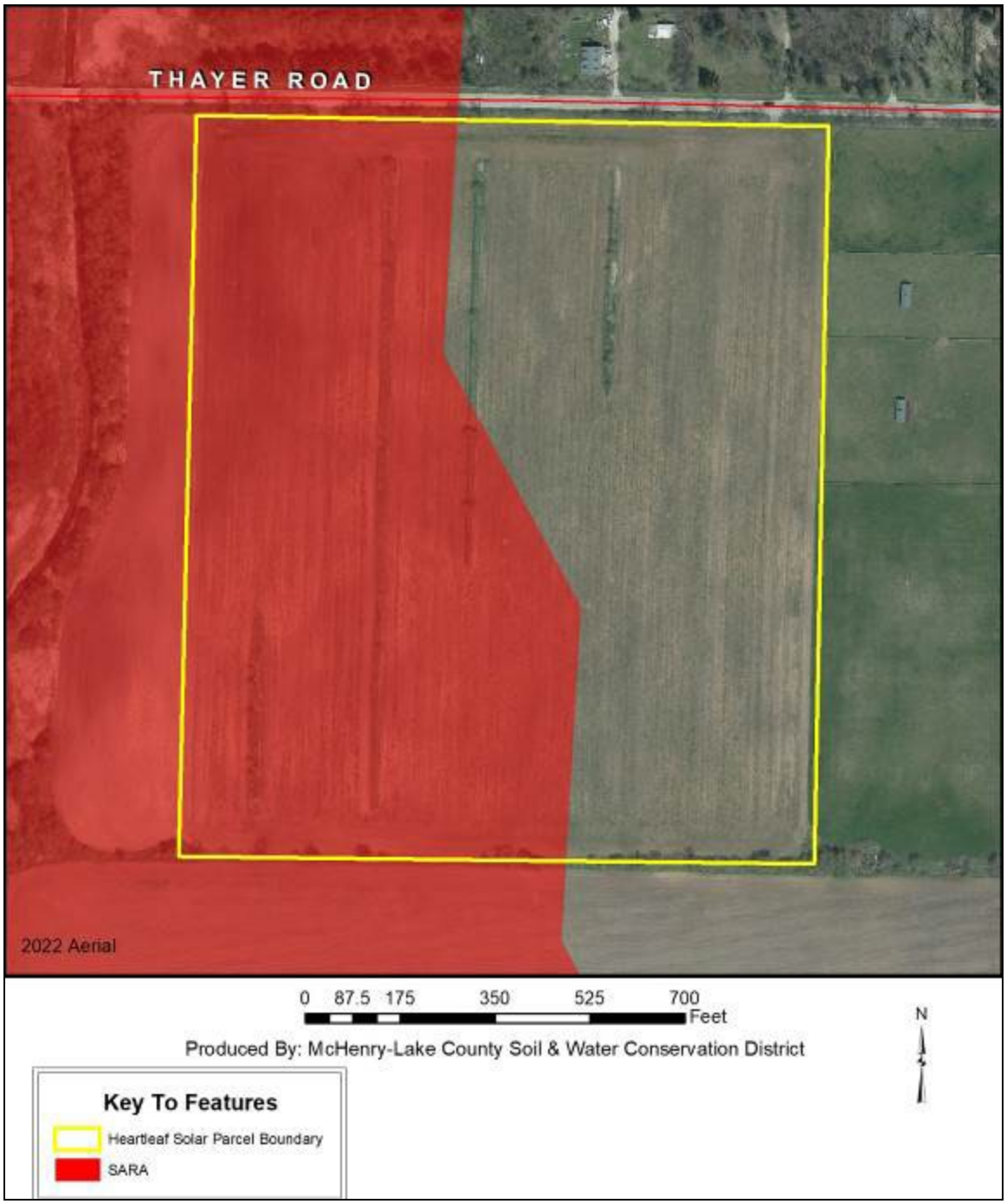
Developed for McHenry County in 2008 and revised in 2018 is the "McHenry County Sensitive Aquifer Recharge Areas" map. Because McHenry County is 100% reliant on groundwater and has been experiencing groundwater quantity/quality issues, the county board in 1995 authorized a groundwater investigation/report titled "County of McHenry Groundwater Resources Management Plan". Many facts in that report startled decision makers. For example, the report found that in 2000, one township was withdrawing groundwater at unsustainable rates and by 2030 if status-quo, three townships would be doing the same and that three other townships would be approaching that un-sustainability. In 2007, the County Board hired a full time Water Resources Manager and authorized the creation of the McHenry County Groundwater Task Force. The Recharge Subcommittee of the Groundwater Task Force was charged with identifying areas within the county that could be considered to have high potential for recharge of shallow groundwater and develop recommendations for protecting those areas in terms of both quantity and quality. The original main basis for the map identifying recharge is areas of high or moderately high potential for aquifer contamination as identified in the Illinois State Geological Survey's Circular 559, "Geologic Mapping for Environmental Planning, McHenry County, IL". In a meeting of the recharge subcommittee, Illinois State Geological Survey and Illinois State Water Survey, it was determined that the areas of high or moderately high potential for aquifer contamination could be qualified by using soil properties. The plan was to remove from the high and moderately high areas those soils with slow permeability, steep slopes and hydric soils that discharge groundwater. Using Table 6 of the Soil Survey of McHenry County a digital layer was developed of soil properties:

- Restricted permeability
- Slopes 4% or greater (except if the soil had excessive permeability, it was not included)

Also digitized were groundwater discharge hydric soils. NRCS Illinois Area 3 Resource Soil Scientists in 2002 developed a hydric soil recharge/flow through/discharge guide to use when designing wetland restoration. Because recharge/flow through/discharge is very complex and changes depending on the year only soils that were thought to be generally only groundwater discharge were used.

Subsequent to the original map development, 3D groundwater modeling has occurred and provided more precise groundwater flow data and thus was the basis for the 2018 map update. *(Information Courtesy of the McHenry County Groundwater Taskforce – Recharge Subcommittee.)*

The map indicates 18.87 acres of the parcel is within a sensitive aquifer recharge area.


THAYER ROAD
2022 Aerial
0 87.5 175 350 525 700
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
SARA

SOILS INFORMATION

Importance of Soils Information

Soils information comes from Natural Resources Conservation Service Soil Maps and Descriptions for McHenry County. This information is important to all parties involved in determining the suitability of the proposed land use change.

Each soil polygon is given a number, which represents its soil type. The letter found after the soil type number indicates the soils slope class.

Each soil map unit has limitations for a variety of land uses such as septic systems, buildings with basements, and buildings without basements. It is important to remember that soils do not function independently of each other. The behavior of a soil depends upon the physical properties of adjacent soil types, the presence of artificial drainage, soil compaction, and its position in the local landscape.

The limitation categories (slight, moderate or severe) indicate the potential for difficulty in using that soil unit for the proposed activity and, thus, the degree of need for thorough soil borings and engineering studies. A limitation does not necessarily mean that the proposed activity cannot be done on that soil type. It does mean that the reasons for the limitation need to be thoroughly understood and dealt with in order to complete the proposed activity successfully. A severe limitation indicates that the proposed activity will be more difficult and costly to do on that soil type than on a soil type with a moderate or slight rating.

Soil survey interpretations are predictions of soil behavior for specified land uses and specified management practices. They are based on the soil properties that directly influence the specified use of the soil. Soil survey interpretations allow users of soil surveys to plan reasonable alternatives for the use and management of soils.

Soil interpretations do not eliminate the need for on-site study and testing of specific sites for the design and construction for specific uses. They can be used as a guide for planning more detailed investigations and for avoiding undesirable sites for an intended use. The scale of the maps and the range of error limit the use of the soil delineations.


Soil Map—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
Meters
0
40
80
160
240
Feet
0
100
200
400
600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Map Unit Symbol	Map Unit Name	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded	15.2	41.4%
Totals		**36.6**	**100.0%**

Soil Interpretations Explanation

Nonagricultural

General

These interpretative ratings help engineers, planners, and others to understand how soil properties influence behavior when used for nonagricultural uses such as building site development or construction materials. This report gives ratings for proposed uses in terms of limitations and restrictive features. The tables list only the most restrictive features. Other features may need treatment to overcome soil limitations for a specific purpose.

Ratings come from the soil's "natural" state, that is, no unusual modification occurs other than that which is considered normal practice for the rated use. Even though soils may have limitations, an engineer may alter soil features or adjust building plans for a structure to compensate for most degrees of limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs for site preparation and maintenance.

Soil properties influence development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Soil limitation ratings of slight, moderate, and severe are given for the types of proposed improvements that are listed or inferred by the petitioner as entered on the report application and/or zoning petition. The most common types of building limitation that this report gives limitations ratings for is: septic systems. It is understood that engineering practices can overcome most limitations for buildings with and without basements, and small commercial buildings. Limitation ratings for these types of buildings are not commonly provided. Organic soils, when present on the parcel, are referenced in the hydric soils section of the report. This type of soil is considered to be unsuitable for all types of construction.

Limitations Ratings

1. ***Slight*** - This soil has favorable properties for the use. The degree of limitation is minor. The people involved can expect good performance and low maintenance.
2. ***Moderate*** - This soil has moderately favorable properties for the use. Special planning, design, or maintenance can overcome this degree of limitation. During some part of the year, the expected performance is less desirable than for soils rated slight.
3. ***Severe or Very Severe***- This soil has one or more properties that are unfavorable for the rated use. These may include the following: steep slopes, bedrock near the surface, flooding, high shrink-swell potential, a seasonal high water table, or low strength. This degree of limitation generally requires major soil reclamation, special design, or intensive maintenance, which in most situations is difficult and costly.

SOIL LEACHABILITY

This interpretation is designed to evaluate the potential for nitrate-nitrogen to be transmitted through the soil profile below the root zone by percolating water under nonirrigated conditions. Leaching nitrates have the potential to contaminate shallow and deep aquifers used for drinking water. The ratings are based on inherent soil and climate properties that affect nitrate leaching and do not account for management practices, such as crop rotation and rates and timing of nitrogen fertilizer applications.

The following soil and climate factors are used in the interpretation criteria:

1. Mean annual precipitation minus potential evapotranspiration - This factor provides an estimate of the amount of water that is available to move through the soil profile on an annual basis. Potential evaporation is estimated from mean annual air temperature using an algorithm (developed by the National Soil Survey Center) that employs the Hamon potential evapotranspiration method.

2. Water travel time through the entire soil profile - This factor uses the saturated hydraulic conductivity (Ksat) and thickness of each soil horizon to estimate the number of hours that would be required for a given volume of water to move through the entire soil profile. One advantage of this method for estimating the rate of water movement is that the properties and thickness of each soil horizon are accounted for instead of using an average saturated hydraulic conductivity for the entire profile. This method accounts for subtle differences between soils in texture, structure, horizon thickness, and depth to water-restricting layers.

3. Available water capacity - This factor accounts for the cumulative amount of water available to plants that the entire soil profile can hold at field capacity to a depth of 150 cm. The more water the soil profile can hold, the less water is available for deep leaching.

4. Depth to and duration of a water table - This factor uses a water table index based on the minimum average depth to a water table and the number of months that the water table is present during the period from April through October. The factor is used to account for the loss of nitrates to the atmosphere as nitrous oxide or nitrogen gas due to denitrification under anaerobic conditions caused by water saturation. The higher the water table and the longer its duration, the larger the quantity of nitrates that would potentially be lost to the atmosphere and therefore would not be available for deep leaching.

5. Slope gradient adjusted for hydrologic soil group - The steeper the slope gradient, the higher the potential for surface runoff and the lower the amount of water available to move through the soil profile. The following adjustments are made to the slope gradient by hydrologic group to account for differences in potential for surface runoff:

Hydrologic group A-slope % x 0.75

Hydrologic group B-slope % x 0.85

Hydrologic group C-slope % x 0.95

Hydrologic group D-no adjustment

The ratings are both verbal and numerical. The ratings for Nitrate Leaching Potential, Nonirrigated Areas, are calculated as follows:

- The Mean Annual Precipitation minus Potential Evapotranspiration subrule is weighted by multiplying by 0.60.
- The Water Travel Time subrule is weighted by multiplying by 0.25.
- The Available Water Capacity subrule is weighted by multiplying by 0.15.
- The sum of these three weighted subrules results in a value between 0.00 and 1.00.
- Adjustments are then made for water table depth and duration and for slope gradient adjusted for hydrologic group. The sum of the values from these subrules is subtracted from the sum in step 4 above. The maximum reduction is 0.50 for the water table index subrule and 0.30 for the slope gradient subrule.

The following rating classes for Nitrate Leaching Potential, Nonirrigated Areas, are assigned based on the final calculation from the factors above:

Low: 0.00 to 0.25

Moderate: 0.26 to 0.50

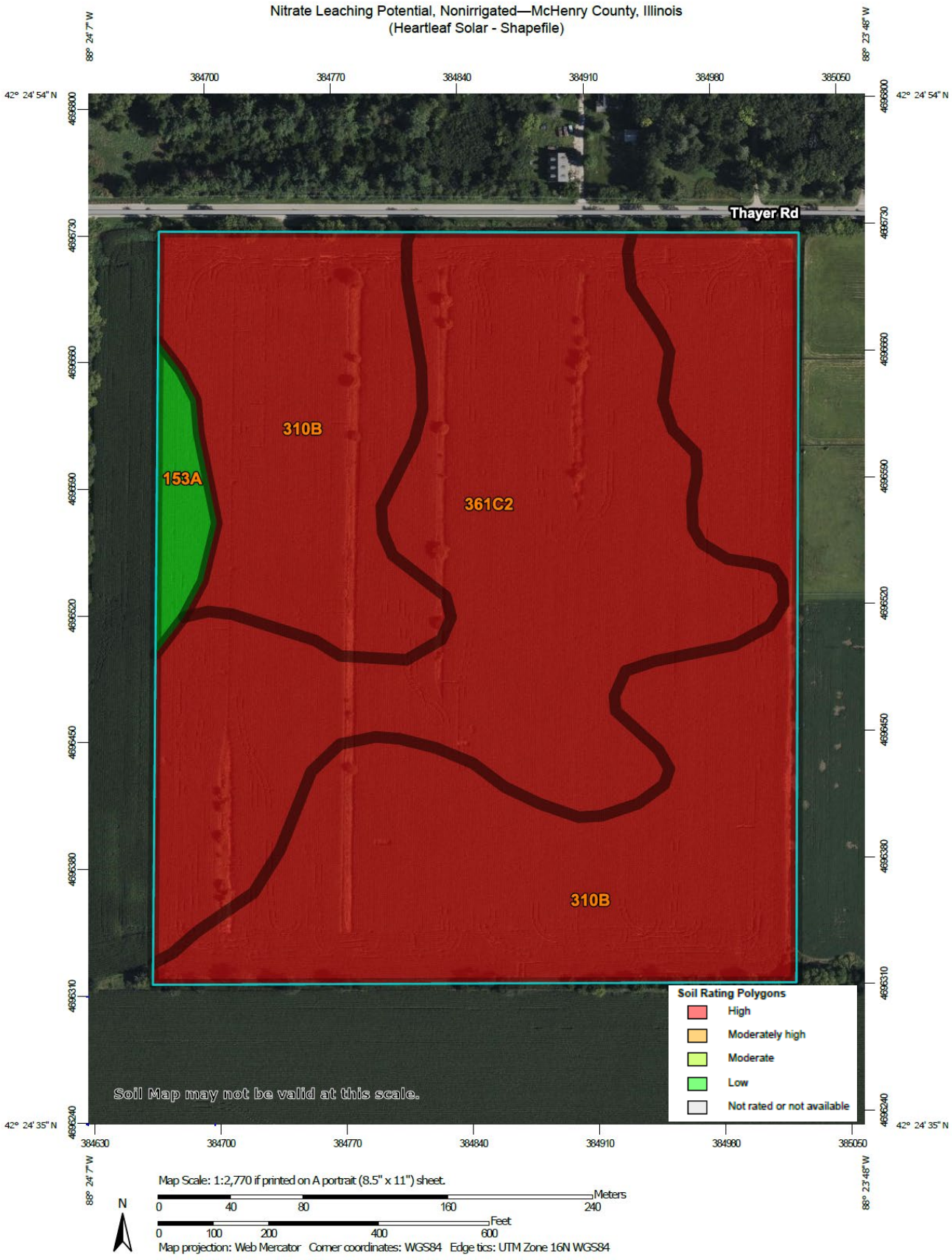
Moderately high: 0.51 to 0.75

High: 0.76 to 1.00

The ratings indicate the potential for nitrate leaching below the root zone, based on inherent soil and climate properties. A "low" rating indicates a low potential for leaching of nitrates below the root zone. A "high" rating indicates a high potential for leaching of nitrates below the root zone. The "moderate" and "moderately high" ratings indicate intermediate potential.

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.


Nitrate Leaching Potential, Nonirrigated—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Rating Polygons
High
Moderately high
Moderate
Low
Not rated or not available
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
40
80
160
240
Feet
0
100
200
400
600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Nitrate Leaching Potential, Nonirrigated

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	Low	Pella, cool (85%)	Water quantity available for leaching (0.99)	0.9	2.5%
				Denitrification due to saturation (0.50)		
310B	McHenry silt loam, 2 to 4 percent slopes	High	McHenry (90%)	Water quantity available for leaching (1.00)	20.5	56.1%
				Water travel time (0.92)		
				Water holding capacity (0.18)		
			Kidder (5%)	Water quantity available for leaching (1.00)		
				Water travel time (0.95)		
				Water holding capacity (0.39)		
361C2	Kidder loam, 4 to 6 percent slopes, eroded	High	Kidder, eroded (95%)	Water quantity available for leaching (1.00)	15.2	41.4%
				Water travel time (0.95)		
				Water holding capacity (0.43)		
			Fox (3%)	Water quantity available for leaching (1.00)		
				Water travel time (0.76)		
				Water holding capacity (0.67)		

Rating	Acres	Percent
High	35.7	97.5%
Low	0.9	2.5%

SOIL PERMEABILITY

Soil permeability is the quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality.

For the purposed of the NRI Report, those soils which have “rapid” to “very rapid” permeability, have been identified as “highly permeable.”

Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow ..... 0.0 to 0.01 inch
Very slow ..... 0.01 to 0.06 inch
Slow ..... 0.06 to 0.2 inch
Moderately slow ..... 0.2 to 0.6 inch
Moderate ..... 0.6 inch to 2.0 inches
Moderately rapid ..... 2.0 to 6.0 inches
Rapid ..... 6.0 to 20 inches
Very rapid ..... more than 20 inches

Highly Permeable Soils

Map Unit Symbol	Highly Permeable	Acres	Percent
153A	No	0.9	2.5%
310B	No	20.5	56.1%
361C2	No	15.2	41.4%
Total Highly Permeable		**0.0**	**0.0%**

SOIL EROSION & SEDIMENT CONTROL

Erosion is the wearing away of the soil by water, wind, and other forces. Soil erosion threatens the Nation's soil productivity and contributes the most pollutants in our waterways. Water causes about two thirds of erosion on agricultural land. Four properties, mainly, determine a soil's erodibility:

1. Texture 2. Slope 3. Structure
4. Organic matter content

Slope has the most influence on soil erosion potential when the site is under construction. Erosivity and runoff increase as slope grade increases. The runoff then exerts more force on the particles, breaking their bonds more readily and carrying them farther before deposition. The longer water flows along a slope before reaching a major waterway, the greater the potential for erosion.

Soil erosion during and after this proposed construction can be a primary non-point source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, decrease the storage capacity of lakes, clog streams and drainage channels, cause deterioration of aquatic habitats, and increase water treatment costs. Soil erosion also increases the risk of flooding by choking culverts, ditches and storm sewers, and by reducing the capacity of natural and man-made detention facilities.

The general principles of erosion and sedimentation control measures include:

- reducing or diverting flow from exposed areas, storing flows or limiting runoff from exposed areas,
- staging construction in order to keep disturbed areas to a minimum,
- establishing or maintaining or temporary or permanent groundcover,
- retaining sediment on site and
- properly installing, inspecting and maintaining control measures.

Erosion control practices are useful controls only if they are properly located, installed, inspected and maintained.

The SWCD recommends an erosion control plan for all building sites, especially if there is a wetland or stream nearby.

Highly Erodible Soils (HEL)

Map Unit Symbol	HEL	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes – No	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes – No	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded - Yes	15.2	41.4%
Total Highly Erodible Soils		**15.2**	**41.4%**

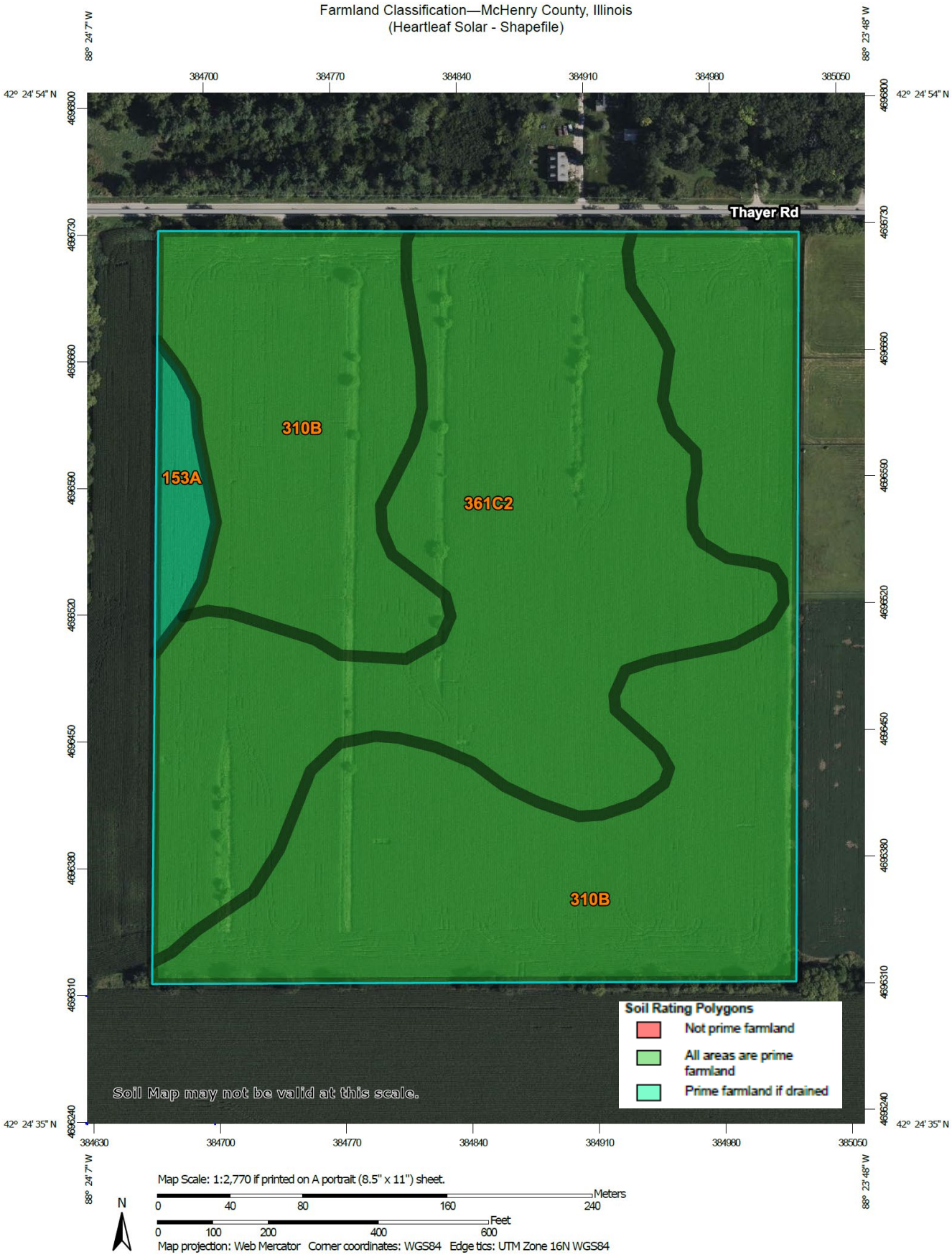
PRIME FARMLAND SOILS

Prime farmland soils are an important resource to McHenry County. Some of the most productive soils in the United States occur locally. Each soil map unit in the United States is assigned a prime or non-prime rating. Prime agricultural land does not need to be in the production of food & fiber.

Section 310 of the NRCS general manual states that urban or built-up land on prime farmland soils is not prime farmland. The percentages of soils map units on the parcel reflect the determination that urban or built up land on prime farmland soils is not prime farmland.

Prime Farmland Soils

Map unit symbol	Map unit name	Rating	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	Prime farmland if drained	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes	All areas are prime farmland	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded	All areas are prime farmland	15.2	41.4%
Total Prime Farmland			**35.7**	**97.5%**
Total Prime Farmland if Drained			**0.9**	**2.5%**


Farmland Classification—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Rating Polygons
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
Meters
0
40
80
160
240
Feet
0
100
200
400
600
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

GROUND-BASED SOLAR ARRAYS, SOIL-PENETRATING ANCHOR SYSTEMS

Description

Ground-based solar arrays are sets of photovoltaic panels that are not situated on a building or pole. These installations consist of a racking system that holds the panel in the desired orientation and the foundation structures that hold the racking system to the ground. Two basic methods are used to hold the systems to the ground, based on site conditions and cost. One method employs driven piles, screw augers, or concrete piers that penetrate into the soil to provide a stable foundation. The ease of installation and general site suitability of soil-penetrating anchoring systems depends on soil characteristics such as rock fragment content, soil depth, soil strength, soil corrosivity, shrink-swell tendencies, and drainage. The other basic anchoring system utilizes precast ballasted footings or ballasted trays on the soil surface to make the arrays too heavy to move. The site considerations that impact both basic systems are slope, slope aspect, wind speed, land surface shape, flooding, and ponding. Other factors that will contribute to the function of a solar power array include daily hours of sunlight and shading from hills, trees or buildings.

Soil-penetrating anchoring systems can be used where the soil conditions are not limited. Installation of these systems requires some power equipment for hauling components and either driving piles, turning helices, or boring holes to install the anchoring apparatus.
Soils can be a non-member, partial member or complete members of the set of soils that are limited for "Ground-based Solar Panel Arrays". If a soil's property within 150 cm (60 inches) of the soil surface has a membership indices greater than zero, then that soil property is limiting and the soil restrictive feature is identified. The overall interpretive rating assigned is the maximum membership indices of each soil interpretive property that comprise the "Ground-based Solar Panel Array" interpretive rule. Minor restrictive soil features are identified but not considered as part of the overall rating process. These restrictive features could be important factors where the major restrictive features are overcome through design application.

Soils are placed into interpretive rating classes per their rating indices. These are not limited (rating index = 0), somewhat limited (rating index greater than 0 and less than 1.0), or very limited (rating index = 1.0).

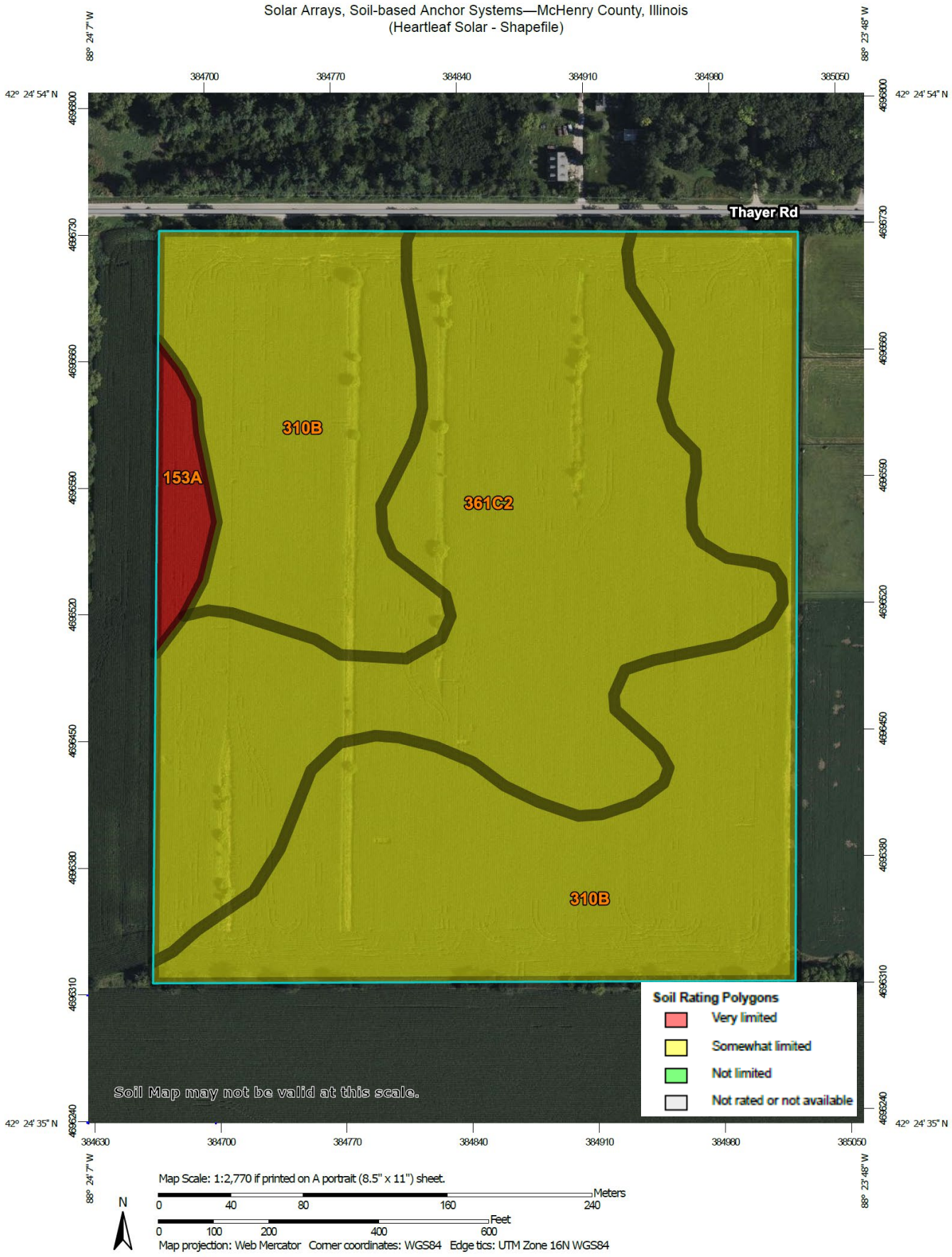
Numerical ratings indicate the degree of limitation. The ratings are shown in decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil has the least similarity to a good site (1.00) and the point at which the soil feature is very much like known good sites (0).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

References:
Canada, S. 2012. Corrosion impacts on steel piles. Solarpro. Solarprofessional.com.

Romanoff, Melvin. 1962. Corrosion of Steel Pilings in Soils. Journal of Research of the National Bureau of Standards. (Volume 66C, No. 3). July/September, 1962.


Solar Arrays, Soil-based Anchor Systems—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Rating Polygons
Very limited
Somewhat limited
Not limited
Not rated or not available
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
40
80
160
240
Feet
0
100
200
400
600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Solar Arrays, Soil-based Anchor Systems

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	Very limited	Pella, cool (85%)	Ponding (1.00)	0.9	2.5%
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Slope shape across (0.30)		
310B	McHenry silt loam, 2 to 4 percent slopes	Somewhat limited	McHenry (90%)	Frost action (0.50)	20.5	56.1%
				Slope shape across (0.20)		
				Low strength (0.14)		
				Hillslope position (0.13)		
			Kidder (5%)	Frost action (0.50)		
				Slope shape across (0.20)		
				Hillslope position (0.13)		
361C2	Kidder loam, 4 to 6 percent slopes, eroded	Somewhat limited	Kidder, eroded (95%)	Frost action (0.50)	15.2	41.4%
				Slope shape across (0.20)		
				Hillslope position (0.13)		
			Fox (3%)	Steel corrosion (0.75)		
				Frost action (0.50)		
				Slope shape across (0.20)		
				Hillslope position (0.13)		

Rating	Acres	Percent
Somewhat limited	35.7	97.5%
Very limited	0.9	2.5%

AGRICULTURAL AREAS

The Agricultural Areas Conservation and Protect Act became effective July 1, 1980. The purpose of the Act is to provide a means by which agricultural land may be protected and enhanced as a viable segment of the State's economy and as an economic and environmental resource of major importance. Established Ag Areas tend to influence adjacent and surrounding land use changes since they are voluntary in nature and petitioned before the County Board for approval. Ag Areas are considered a high commitment to agriculture. Designated Ag Areas limit land utilization to specified agricultural uses within their designated boundaries. Ag Areas allow landowners limited benefits such as immunity form locally enacted ordinances, which would limit farming operations and immunity from special tax assessments from local units of government.

Office Maps indicate there are no State designated agricultural areas on or adjacent to the parcel.

LAND EVALUATION & SITE ASSESSMENT (LESA)

The Land Evaluation and Site Assessment system is a tool designed to evaluate the viability of agricultural lands where changes in land-use are proposed. LESA was developed as a decision-making tool used by the Zoning Board of Appeals, City Councils or County Boards to help make unbiased decisions of proper land-use. The LESA system was developed by the USDA-NRCS and takes into consideration local conditions such as physical characteristics of the land, compatibility of surrounding land-uses, urban growth factors, and land-use policies determined by local government. LESA was designed to be used in conjunction with the county's land-use plan, zoning ordinances, and other policies being used to decide land-use changes.

Decision makers use the Land Evaluation and Site Assessment (LESA) System to determine the suitability of a land use change and/or a zoning request as it relates to agricultural land. The LESA System is a two step procedure that includes:

- Land Evaluation (LE), soils value
- Site Assessment (SA), land use

Land Evaluation (**LE**) encompasses information regarding soils found on the site and their suitability for agricultural purposes. McHenry County soils consist of 73 different soil series ranging from gravely loams to wet muck soils and from highly productive agricultural soils to high quality gravel deposits. For purposes of the Land Evaluation portion of the LESA system, each soil is assigned a relative value number, from 0 to 100, a 0 being the worst soils for crop production, 100 the best. Parcels containing higher percentages of higher valued soils will rate higher on the overall LESA score while those containing higher percentages lowered value soils will rate lower in the overall LESA score. McHenry County SWCD provides a weighted average of the soils using a simple, mechanical, unbiased method of determining agricultural suitability of soils on site.

Site Assessment (**SA**) identifies and weighs 10 criteria, other than soils information, that contributes to the quality of a site for agricultural uses. The determination to include the specific site assessment factors directly resulted from the following:

- McHenry County Zoning Ordinance,
- 2030 Land Use Plan,
- Other adopted county policies.

In summary, the LESA evaluation addresses all factors, including soils information, together to provide a rational, consistent, and unbiased determination of the impact to agriculture from the proposed land use and zoning changes.

LAND EVALUATION (LE) WORKSHEET

Map Unit Symbol	LE Score	Acres	Percent	Weighted Ave.
153A	94	0.9	2.5%	2.35
310B	79	20.5	56.1%	44.32
361C2	67	15.2	41.4%	27.74
Land Evaluation Score		**36.6**	**100.0%**	**74.4**

Explanation of the LE Worksheet:

Symbol: is the soil type of the polygon on the soils map.
Percentage and Acreage: the percentages of the parcel, and the area that the soil polygon represents.
LE Score: the numeric value from 0 - 100 that is assigned that soil unit
Weighted Ave: The acreage multiplied by the value of that soil unit.

DRAINAGE, RUNOFF AND FLOOD INFORMATION

U.S.G.S Topographic maps give information on elevations, which are important mostly to determine slopes, drainage directions, and watershed information.

Elevations determine the area of impact of floods of record. Slope information determines steepness and erosion potential. Drainage directions determine where water leaves the PIQ, possibly impacting surrounding natural resources.

Watershed information is given for changing land use to a subdivision type of development on parcels greater than 10 acres.

What is a watershed?

Simply stated, a watershed is the area of land that contributes water to a certain point. The point that we use on these reports is usually the point where water exits the parcel. The point is marked with a "○." The watershed boundary is drawn in using the following marking: (— • • —). Often times, water will flow off the parcel in two or more directions. In that case, there is a watershed break on the parcel. (— • • —), and there are two or more watersheds on the parcel.

The watershed boundary is important because the area of land in the watershed can now be calculated using an irregular shape area calculator such as a dot counter or planimiter.

Using regional storm event information, and site specific soils and land use information, the peak stormwater flow through the point marked "○" for a specified storm event can be calculated. This value is called a "Q" value (for the given storm event), and is measured in cubic feet per second (CFS).

When construction occurs, the Q value naturally increases because of the increase in impermeable surfaces. This process decreases the ability of soils to accept and temporarily hold water. Therefore, more water runs off and increases the Q value.

Theoretically, if each development, no matter how large or small, maintains their preconstruction Q value after construction by the installation of stormwater management systems, the streams and wetlands and lakes will not suffer damage from excessive urban stormwater.

For this reason, the McHenry County SWCD recommends that the developer for intense uses such as a subdivision calculate the preconstruction Q value for the exit point(s). A stormwater management system should be designed, installed, and maintained to limit the postconstruction Q value to be at or below the preconstruction value.

Importance of Flood Information

A floodplain is defined as land adjoining a watercourse (riverine) or an inland depression (non-riverine) that is subject to periodic inundation by high water. Floodplains are important areas demanding protection since they have water storage and conveyance functions which affect upstream and down stream flows, water quality and quantity, and suitability of the land for human activity. Since floodplains play distinct and vital roles in the hydrologic cycle, development that interferes with their hydrologic and biologic functions should be carefully considered.

Flooding is both dangerous to people and destructive to their properties. The following maps, when combined with wetland and topographic information, can help developers and future homeowners to "sidestep" potential flooding or ponding problems.

FIRM is the acronym for the Flood Insurance Rate Map, produced by the Federal Emergency Management Agency. These maps define flood elevation adjacent to tributaries and major bodies of water, and superimpose that onto a simplified USGS topographic map. The scale of the FIRM maps is generally dependent on the size and density of parcels in that area. (This is to correctly determine the parcel location and flood plain location.) The FIRM map has three (3) zones. A is the zone of 100 year flood, zone B is the 100 to 500 year flood, and zone C is outside the flood plain.

The Hydrologic Atlas (H.A.) Series of the Flood of Record Map is also used for the topographic information. This map is different from the FIRM map mainly because it will show isolated, or pocketed flooded areas. McHenry County uses both these maps in conjunction with each other for flooded area determinations. The Flood of Record maps, show the areas of flood for various years. Both of these maps stress that the recurrence of flooding is merely statistical. That is to say a 100-year flood may occur twice in one year, or twice in one week, for that matter.

It should be noted that greater floods than those shown on the two maps are possible. The flood boundaries indicated provide a historic record only until the map publication date. Additionally, these flood boundaries are a function of the watershed conditions existing when the maps were produced. Cumulative changes in runoff characteristics caused by urbanization can result in an increase in flood height of future flood episodes.

Floodplains play a vital role in reducing the flood damage potential associated with an urbanizing area and, when left in an undisturbed state, also provide valuable wildlife habitat benefits. If it is the petitioner's intent to conduct floodplain filling or modification activities, the petitioner and the Unit of Government responsible need to consider the potentially adverse effects this type of action could have on adjacent properties. The change or loss of natural floodplain storage often increases the frequency and severity of flooding on adjacent property.

If the available maps indicate the presence of a floodplain on the PIQ, the petitioner should contact the IDOT-DWR and FEMA to delineate a floodplain elevation for the parcel. If a portion of the property is indeed floodplain, applicable state, county and local regulations will need to be reflected in the site plans.

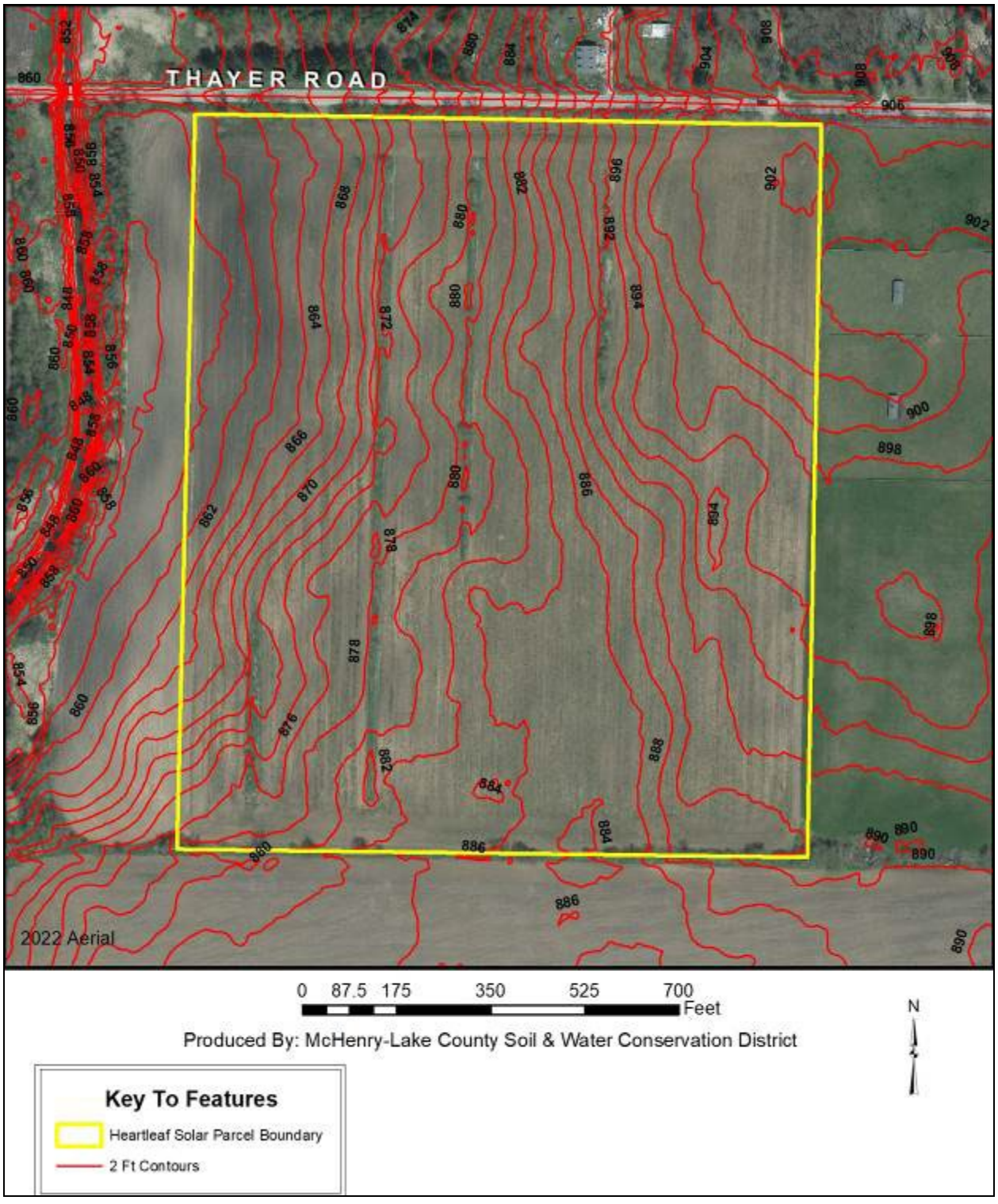
Another indication of flooding potential can be found in the soils information. Hydric soils indicate the presence of drainageways, areas subject to ponding, or a naturally occurring high water table. These need to be considered along with the floodplain information when developing the site plan and the stormwater management plan. If the site does include these hydric soils and development occurs, thus raising the concerns of the loss of water storage in these soils and the potential for increased flooding in the area.

Flood of Record Map Showing Topographic Information

This parcel is located on sloping topography (slopes 0 to 6%) involving high and low areas (elevation ranges from 858’ above sea level to 902’ above sea level).

During construction, temporary vegetation can decrease erosion on the slopes if the area is to be mass graded.

Also, the flood of record for this area indicates the parcel has not previously flooded.


THAYER ROAD
2022 Aerial
0 87.5 175 350 525 700
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
2 Ft Contours

Federal Emergency Management Agency: Flood Insurance Rate Map Panel 17111C0070J

The map indicates the parcel is outside of the 100-year floodplain.

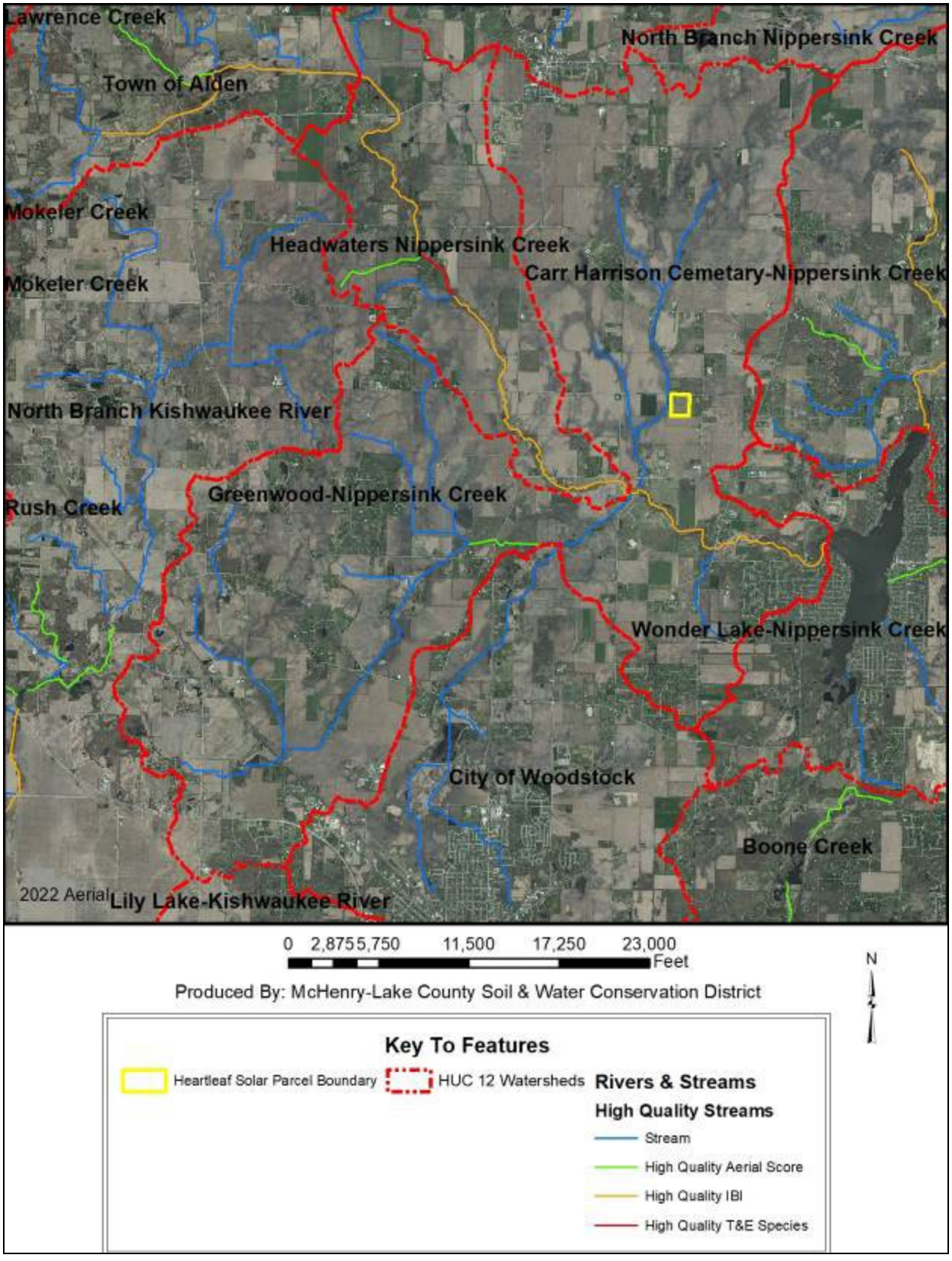
WATERSHED PLANS

Watershed and Subwatershed Information

A watershed is the area of land that drains into a specific point including a stream, lake or other body of water. High points on the Earth's surface, such as hills and ridges define watersheds. When rain falls in the watershed, it flows across the ground towards a stream or lake. Rainwater carries any pollutants it comes in contact with such as oils, pesticides, and soil. Everyone lives in a watershed. Their actions can impact natural resources and people living downstream. Residents can minimize this impact by being aware of their environment and implications of their activities, implementing practices recommended in watershed plans and educating others about their watershed.

The parcel is located within the Greenwood Subwatershed (HUC 12 – 071200060905) of the Nippersink Creek Watershed. The Nippersink Creek Watershed comprises 97,551.80 acres of McHenry County. In 2008 the Nippersink Creek Watershed Committee updated their Watershed Plan (originally developed in 1998) which outlines general watershed management objectives and subwatershed site specific objectives. According to the report, "Without questions, the biggest threat to the health and sustainability of the Nippersink Watershed is the rapid development of agricultural land into suburban land uses. This change in land use continues to be performed using land development methods which do not preserve the interception, infiltration, storage, and slow release of accumulated rainfall to the underlying shallow aquifers and adjacent wetlands and streams." Future impacts and impairments include: degraded water quality from development, additional channel hydromodification, loss of natural wetlands and stream corridor, and reduced groundwater recharge. Their watershed plan can be accessed on their website: http://nippersink.org/plan.htm.

The Subwatershed Plan for the Headwaters of Nippersink Creek, does not identify any site specific recommendations for this parcel. Therefore, the general Nippersink Watershed Objectives should be considered in planning this development. Implementation strategies for the objectives are described in further detail within their report.


Lawrence Creek
North Branch Nippersink Creek
Town of Alden
Mokeler Creek
Headwaters Nippersink Creek
Carr Harrison Cemetary-Nippersink Creek
Mokeler Creek
North Branch Kishwaukee River
Greenwood-Nippersink Creek
Rush Creek
Wonder Lake-Nippersink Creek
City of Woodstock
Boone Creek
2022 Aerial
Lily Lake-Kishwaukee River
0 2,8755,750 11,500 17,250 23,000
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
HUC 12 Watersheds
Rivers & Streams
High Quality Streams
Stream
High Quality Aerial Score
High Quality IBI
High Quality T&E Species

WETLAND INFORMATION

Importance of Wetland Information

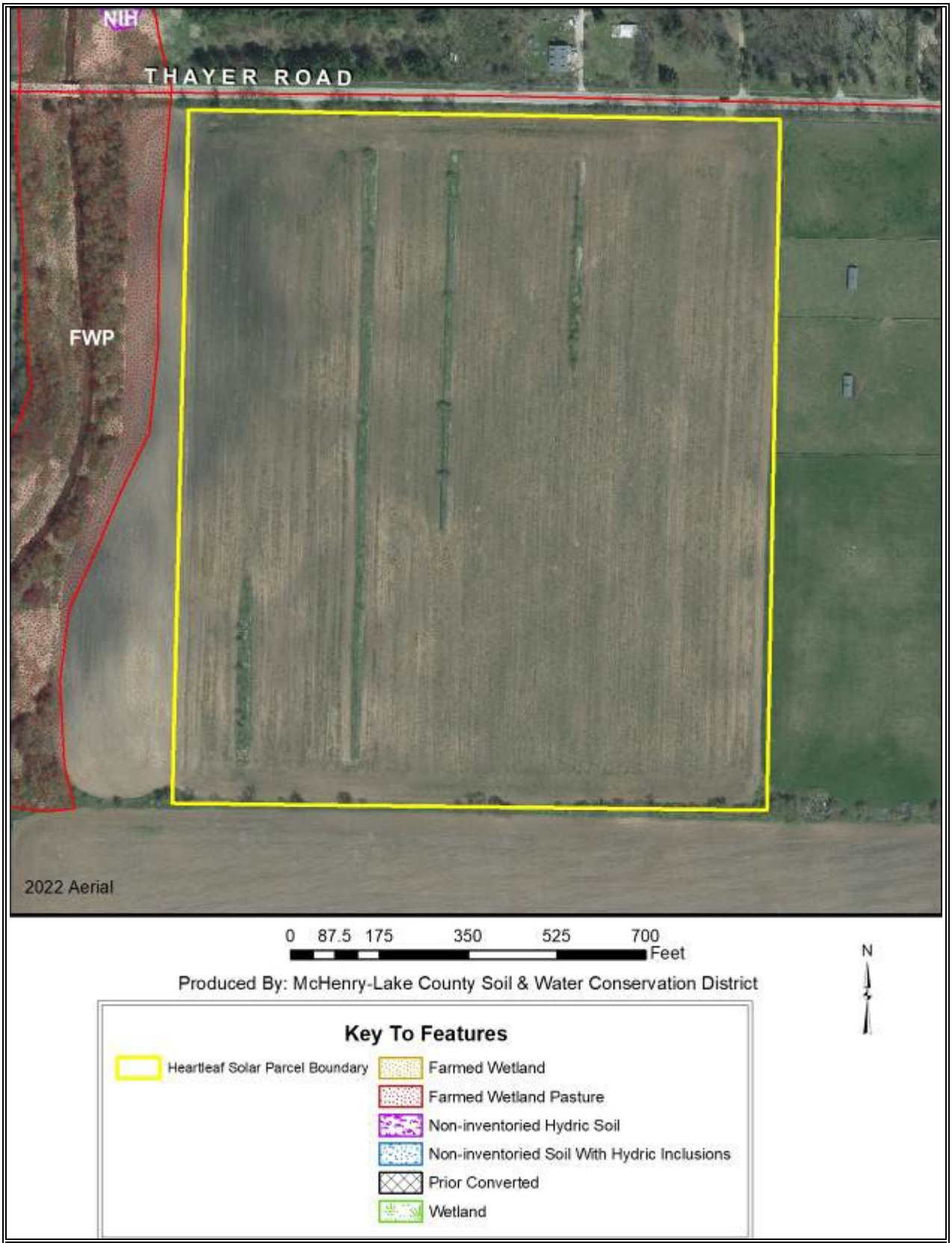
Wetlands function in many ways to provide numerous benefits to society. They control flooding by offering a slow release of excess water downstream or through the soil. They cleanse water by filtering out sediment and some pollutants, and can function as rechargers of our valuable groundwater. They also are essential breeding, rearing, and feeding grounds for many species of wildlife.

These benefits are particularly valuable in urbanizing areas as development activity typically adversely affects water quality, increases the volume of stormwater runoff, and increases the demand for groundwater. In an area where many individual homes rely on shallow groundwater wells for domestic water supplies, activities that threaten potential groundwater recharge areas are contrary to the public good. The conversion of wetlands, with their sediment trapping and nutrient absorbing vegetation, to biologically barren stormwater detention ponds can cause additional degradation of water quality in downstream or adjacent areas.

It has been estimated that over 95% of the wetlands that were historically present in Illinois have been destroyed while only recently has the true environmental significance of wetlands been fully recognized. America is losing 100,000 acres of wetland a year, and has saved 5 million acres total (since 1934). One acre of wetland can filter 7.3 million gallons of water a year. These are reasons why our wetlands are high quality and important.

This section contains the NRCS (Natural Resources Conservation Service) Wetlands Inventory, which is the most comprehensive inventory to date. The NRCS Wetlands Inventory is reproduced from an aerial photo at a scale of 1" equals 660 feet. The NRCS developed these maps in cooperation with U.S. EPA (Environmental Protection Agency,) and the U.S. Fish and Wildlife Service, using the National Food Security Act Manual, 3rd Edition. The main purpose of these maps is to determine wetland areas on agricultural fields and areas that may be wetlands but are in a non-agriculture setting.

The NRCS Wetlands Inventory in no way gives an exact delineation of the wetlands, but merely an outline, or the determination that there is a wetland within the outline. For the final, most accurate wetland **determination** of a specific wetland, a wetland ***delineation*** must be certified by NRCS staff using the National Food Security Act Manual (on agricultural land.) On urban land, a certified wetland delineator must perform the delineation using the ACOE 1987 Manual. *See the glossary section for the definitions of "delineation" and "determination."*



Natural Resources Conservation Service: Wetland Inventory Map.

The map indicates there are no wetlands on the parcel.

ADID (ADVANCED IDENTIFICATION OF AQUATIC RESOURCES)

Wetlands are some of the most productive and diverse ecological systems on Earth. The unique characteristics of plants, soils, and water distinguish these systems. Marshes, wet meadows, fens and bogs are some of the common wetland types found within McHenry County. There are also various streams scattered throughout the county, including several that rank among the highest quality in Illinois.

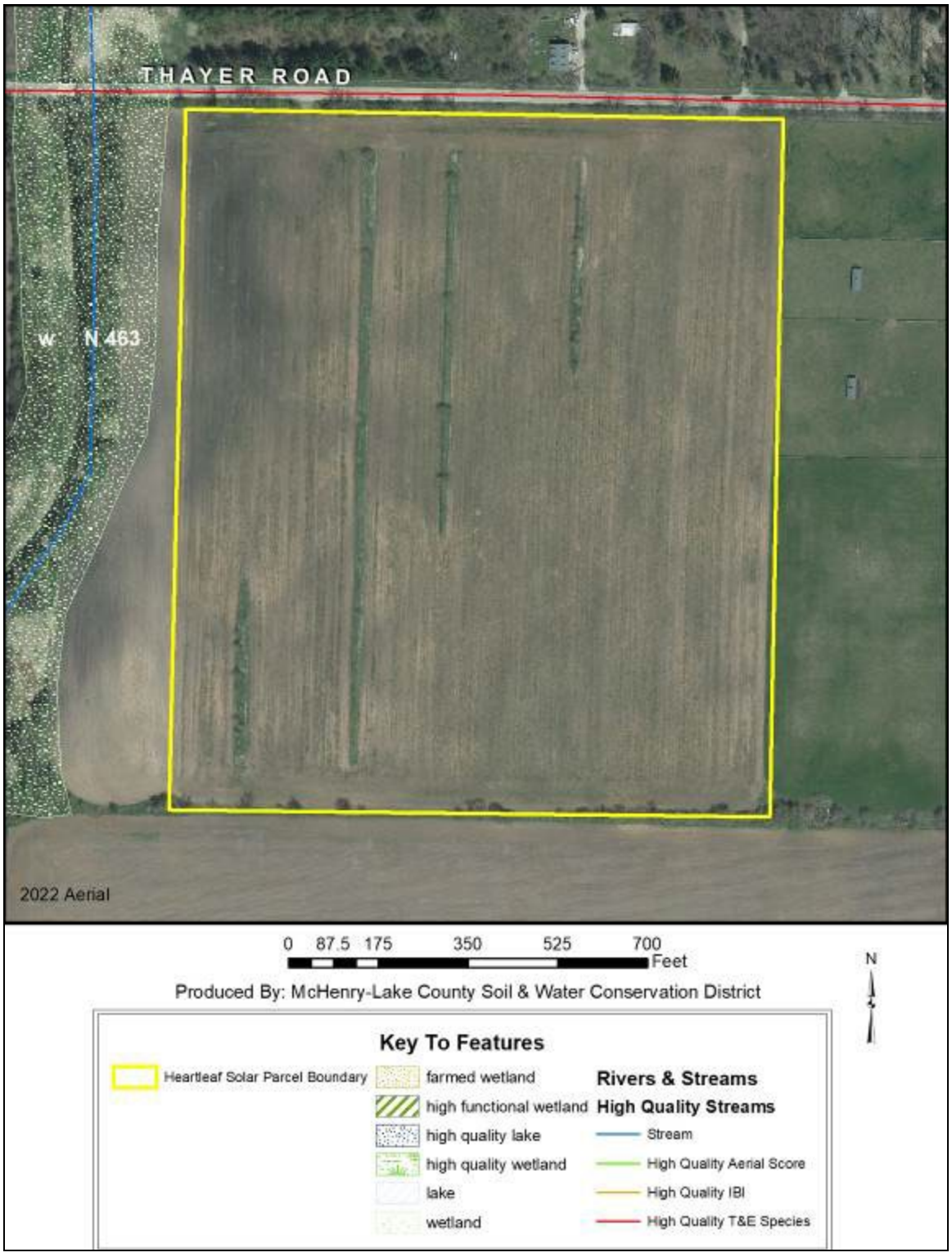
These wetlands, lakes and streams provide needed habitat and food for fish and wildlife. Diverse plants both common and rare are can be found in wetlands, and over 40 percent of Illinois' threatened and endangered plant and animal species rely on wetlands.

Wetlands have many other roles. They are critical to the control of flooding by storing vast quantities of runoff water during floods, and releasing it slowly to rivers and srteams as the floodwater recedes. This in turn helps to prevent erosion in downstream channels, aids in groundwater recharge, and stabilizes the baseflow in streams and rivers. Wetlands are also crucial in protecting water quality. Wetlands that border lakes and streams prevent erosion by holding soil in place and deflecting erosive flows and waves. They also remove sediment, nutrients, and toxic chemicals from runoff water.
Other benefits include groundwater recharge, discharge of clean water, recreation, enhancement of natural aesthetics and serve as buffers between adjacent developments.

This program designed by the EPA (Environmental Protection Agency), is intended to improve awareness of the functions and values of wetlands and other U.S. waters. It is also intended to inform landowners and developers that high quality sites may not be unsuitable for the disposal of dredged or fill material. These ADID projects can also provide guidance on the long-term protection and management of aquatic resources.

The wetland boundaries shown are not jurisdictional delineations. Any proposed drainage work in wet areas requires a certified wetland determination.

The ADID study indicates there are no wetlands on the parcel. (Map shown on next page.)


THAYER ROAD
W N 463
2022 Aerial
0 87.5 175 350 525 700
Feet
N
Produced By: McHenry-Lake County Soil & Water Conservation District
Key To Features
Heartleaf Solar Parcel Boundary
farmed wetland
high functional wetland
high quality lake
high quality wetland
lake
wetland
Rivers & Streams
High Quality Streams
Stream
High Quality Aerial Score
High Quality IBI
High Quality T&E Species

Hydric Soils

Soils information gives another indication of flooding potential. The soils map on this page indicates the soil(s) on the parcel that the Natural Resources Conservation Service indicates as hydric. Hydric soils by definition have seasonal high water at or near the soil surface and/or have potential flooding or ponding problems. All hydric soils range from poorly suited to unsuitable for building. One group of the hydric soils, are the organic soils, which formed from dead organic material. Organic soils are unsuitable for building because of not only the high water table, but also their subsidence problems.

It is also important to add the possibility of hydric inclusions in a soil type. An inclusion is a soil polygon that is too small to appear on these maps. While relatively insignificant for agricultural use, hydric soil inclusions become more important to more intense uses such as a residential subdivision.

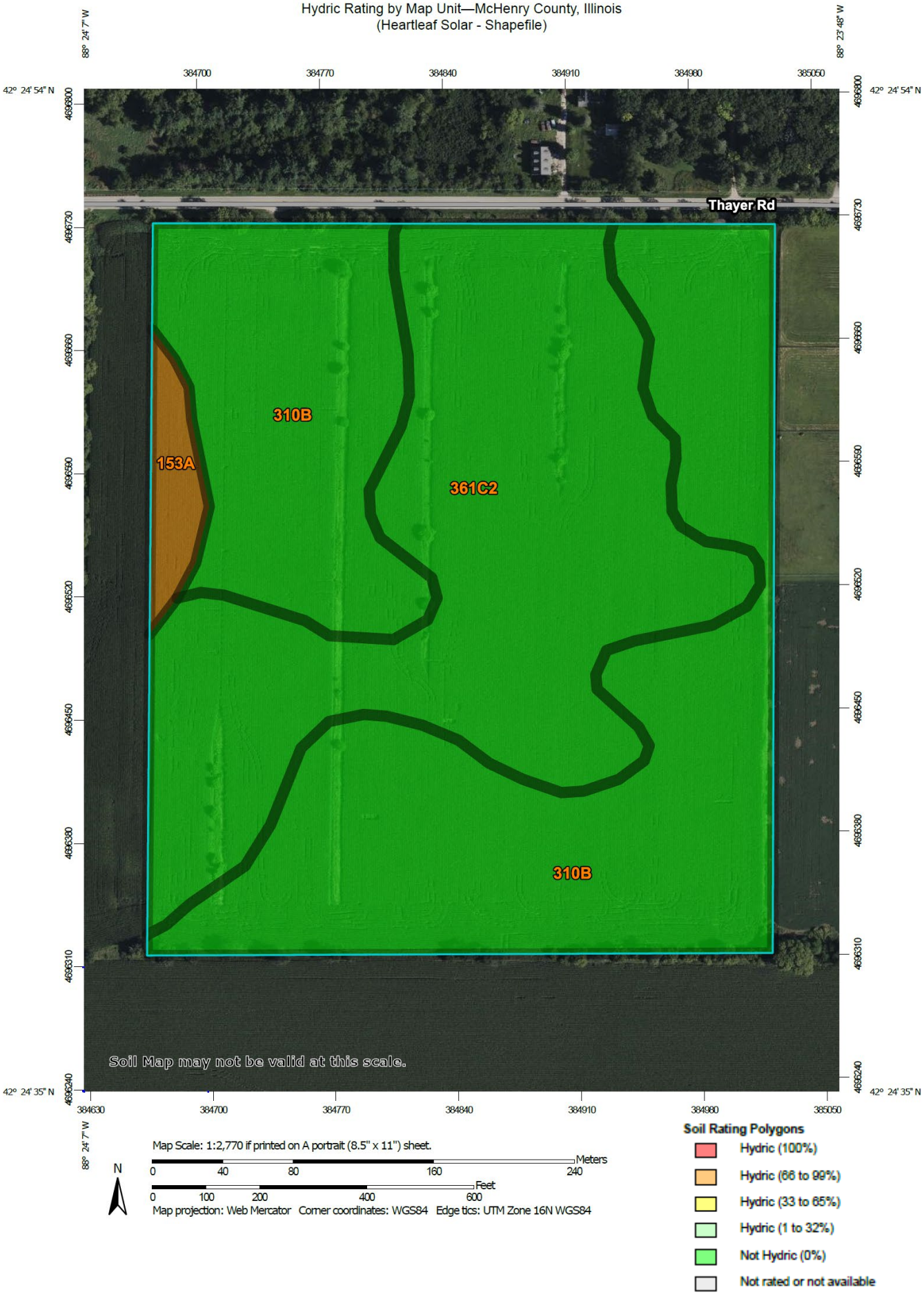
While considering hydric soils and hydric inclusions, it is noteworthy to mention that subsurface agriculture drainage tile occurs in almost all poorly drained and somewhat poorly drained soils. Drainage tile expedites drainage and facilitates farming. It is imperative that these drainage tiles remain undisturbed. A damaged subsurface drainage tile may return original hydrologic conditions to all of the areas that drained through the tile (ranging from less than one acre to many square miles.)

For an intense land use, such as a subdivision, the McHenry County SWCD recommends the following:

1. A topographical survey with 1 foot contour intervals to accurately define the flood area on the parcel.
2. An intensive soil survey to define most accurately the locations of the hydric soils and inclusions
3. A drainage tile survey on the area to locate the tiles that must be preserved.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres	Percent
153A	Pella silty clay loam, cool, 0 to 2 percent slopes	87 - Hydric	0.9	2.5%
310B	McHenry silt loam, 2 to 4 percent slopes	0	20.5	56.1%
361C2	Kidder loam, 4 to 6 percent slopes, eroded	0	15.2	41.4%
Total Hydric			**0.9**	**2.5%**


Hydric Rating by Map Unit—McHenry County, Illinois
(Heartleaf Solar - Shapefile)
88° 24' 7" W
88° 23' 48" W
42° 24' 54" N
42° 24' 35" N
384700
384770
384840
384910
384980
385050
384630
4696800
4696730
4696660
4696590
4696520
4696450
4696380
4696310
4696240
Thayer Rd
310B
153A
361C2
310B
Soil Map may not be valid at this scale.
Map Scale: 1:2,770 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0
40
80
160
240
Feet
0
100
200
400
600
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84
Soil Rating Polygons
Hydric (100%)
Hydric (66 to 99%)
Hydric (33 to 65%)
Hydric (1 to 32%)
Not Hydric (0%)
Not rated or not available

WETLAND AND FLOODPLAIN REGULATIONS

PLEASE READ THE FOLLOWING IF YOU ARE PLANNING TO DO ANY WORK NEAR A STREAM (THIS INCLUDES SMALL UNNAMED STREAMS), LAKE, WETLAND OR FLOODWAY.

The laws of the United States and the State of Illinois assign certain agencies specific and different regulatory roles to protect the waters within the State's boundaries. These roles, when considered together, include protection of navigation channels and harbors, protection against flood way encroachments, maintenance and enhancement of water quality, protection of fish and wildlife habitat and recreational resources, and, in general, the protection of total public interest. Unregulated use of the waters within the State of Illinois could permanently destroy or alter the character of these valuable resources and adversely impact the public. Therefore, please contact the proper regulatory authorities when planning any work associated with Illinois waters so that proper consideration and approval can be obtained.

WHO MUST APPLY

Anyone proposing to dredge, fill, rip rap, or otherwise alter the banks or beds of, or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility, flood plain or flood way subject to County, State or Federal regulatory jurisdiction should apply for agency approvals.

REGULATORY AGENCIES:

- **Wetlands or U.S. Waters: U.S. Army Corps of Engineers**, Chicago District,
  231 S. LaSalle St., Suite 1500
  Chicago, IL 60604
  Phone: (312) 846-5330
- **Isolated Wetlands and Floodplain: McHenry County Department of Planning & Development Stormwater Division,**
  2200 N. Seminary Ave., Woodstock, IL 60098
  Phone: (815) 334-4560
- **Flood plains: Illinois Department of Natural Resources \ Office of Water Resources**, 201 W. Center Court, Schaumburg, IL 60196-1096, phone (847).705.
- **Water Quality \ Erosion Control: Illinois Environmental Protection Agency**, Division of Water Pollution Control, Permit Section, Watershed Unit, 2200 Churchill Road, Springfield, IL 62706, phone (217).782.0610.

COORDINATION

We recommend Early coordination with the regulatory agencies BEFORE finalizing work plans. This allows the agencies to recommend measures to mitigate or compensate for adverse impacts. Also, the agency can make possible environmental enhancement provisions early in the project planning stages. This could reduce time required to process necessary approvals.

CAUTION: Contact with the United States Army Corps of Engineers is strongly advised before commencement of any work in or near a water of the United States. This could save considerable time and expense. Persons responsible for willful and direct violation of Section 10 of the River And Harbor Act of 1899 or Section 404 of the Federal Water Pollution Control Act are subject to fines ranging up to $27,500 per day of violation and imprisonment for up to one year or both.

THREATENED & ENDANGERED SPECIES

The State of Illinois provides habitat for 500 threatened and endangered species, including 356 plants and 144 animals. Twelve counties in Illinois have 50 or more endangered species, 5 of which are in northeastern Illinois. ("Endangered Species of Illinois," by the U.S. Fish & Wildlife Service, IDOC Division of Natural Heritage & Endangered Species Protection Board).

Approximately 40% of the state's listed species depend on wetlands for survival. The two main causes for species decline are the loss of habitat and the degradation of habitat. While habitat loss is the primary reason species become endangered, the effects of habitat change are not always seen overnight. It is seldom simply a case of individual animals or plants being killed. More often, habitat loss and the resulting species declines are indirectly caused and are the result of cumulative impacts over a period of time.

It is because of this slow encroachment of habitat degradation, fragmentation and loss that wildlife habitat must be looked at on a greater scale than just the site. Cumulative impacts occur because a small amount of damage is being done over here and little over there and no one is looking at the whole picture. Thus, the villages and county are strongly encouraged to look at habitat management on a regional scale.

THERE IS A POSSIBILITY FOR ENDANGERED SPECIES ON THE SITE. IF A REQUEST HAS NOT ALREADY BEEN SUBMITTED, THE PETITIONER SHOULD ASK THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES TO CHECK THIS PARCEL FOR THE PRESENCE OF THREATENED OR ENDANGERED SPECIES. SHOULD ANY SUCH SPECIES BE IDENTIFIED AS UTILIZING THIS PARCEL, THE PETITIONER WILL BE NOTIFIED ACCORDINGLY. FOR MORE INFORMATION ON HOW TO REQUEST AN ENDANGERED SPECIES CHECK ON THIS PARCEL, PLEASE VISIT
www.dnrecocat.state.il.us/ecopublic.

GLOSSARY

AGRICULTURAL PROTECTION AREAS (AG AREAS) - Allowed by P.A. 81-1173. An AG AREA consists of a minimum of 350 acres of farmland, as contiguous and compact as possible. Petitioned by landowners, AG AREAS protect for a period of ten years initially, then reviewed every eight years thereafter. AG AREA establishment exempts landowners from local nuisance ordinances directed at farming operations, and designated land can not receive special tax assessments on public improvements that do not benefit the land, e.g. water and sewer lines.

AGRICULTURE - The growing, harvesting and storing of crops including legumes, hay, grain, fruit and truck or vegetable including dairying, poultry, swine, sheep, beef cattle, pony and horse production, fur farms, and fish and wildlife farms; farm buildings used for growing, harvesting and preparing crop products for market, or for use on the farm; roadside stands, farm buildings for storing and protecting farm machinery and equipment from the elements, for housing livestock or poultry and for preparing livestock or poultry products for market; farm dwellings occupied by farm owners, operators, tenants or seasonal or year around hired farm workers.

B.G. - Below Grade. Under the surface of the Earth.

BEDROCK - Indicates depth at which bedrock occurs. Also lists hardness as rippable or hard.

FLOODING - Indicates frequency, duration, and period during year when floods are likely to occur.

HIGH LEVEL MANAGEMENT - The application of effective practices adapted to different crops, soils, and climatic conditions. Such practices include providing for adequate soil drainage, protection from flooding, erosion and runoff control, near optimum tillage, and planting the correct kind and amount of high quality seed. Weeds, diseases, and harmful insects are controlled. Favorable soil reaction and near optimum levels of available nitrogen, phosphorus, and potassium for individual crops are maintained. Efficient use is made of available crop residues, barnyard manure, and/or green manure crops. All operations, when combined efficiently and timely, can create favorable growing conditions and reduce harvesting losses -- within limits imposed by weather.

HIGH WATER TABLE - A seasonal high water table is a zone of saturation at the highest average depth during the wettest part of the year. May be apparent, perched, or artesian kinds of water tables.

Water Table, Apparent - A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water Table, Artesian - A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water Table, Perched - A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

DELINEATION - For Wetlands: A series of orange flags placed on the ground by a certified professional that outlines the wetland boundary on a parcel.

DETERMINATION - A polygon drawn on a map using map information that gives an outline of a wetland.

HYDRIC SOIL - This type of soil is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (USDA Natural Resources Conservation Service 1987)

INTENSIVE SOIL MAPPING - Mapping done on a smaller more intensive scale than a modern soil survey to determine soil properties of a specific site, e.g. mapping for septic suitability.

LAND EVALUATION AND SITE ASSESSMENT (L.E.S.A.) - LESA is a systematic approach for evaluating a parcel of land and to determine a numerical value for the parcel for farmland preservation purposes.

MODERN SOIL SURVEY - A soil survey is a field investigation of the soils of a specific area, supported by information from other sources. The kinds of soil in the survey area are identified and their extent shown on a map, and an accompanying report describes, defines, classifies, and interprets the soils. Interpretations predict the behavior of the soils under different used and the soils' response to management. Predictions are made for areas of soil at specific places. Soils information collected in a soil survey is useful in developing land-use plans and alternatives involving soil management systems and in evaluating and predicting the effects of land use.

PALUSTRINE - Name given to inland fresh water wetlands

PERMEABILITY - Values listed estimate the range (in rate and time) it takes for downward movement of water in the major soil layers when saturated, but

allowed to drain freely. The estimates are based on soil texture, soil structure, available data on permeability and infiltration tests, and observation of water movement through soils or other geologic materials.

PIQ - Parcel in question

POTENTIAL FROST ACTION - Damage that may occur to structures and roads due to ice lens formation causing upward and lateral soil movement. Based primarily on soil texture and wetness.

PRIME FARMLAND - Prime farmland soils are lands that are best suited to food, feed, forage, fiber and oilseed crops. It may be cropland, pasture, woodland, or other land, but it is not urban and built up land or water areas. It either is used for food or fiber or is available for those uses. The soil qualities, growing season, and moisture supply are those needed for a well managed soil economically to produce a sustained high yield of crops. Prime farmland produces in highest yields with minimum inputs of energy and economic resources, and farming the land results in the least damage to the environment.

Prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity is acceptable. Prime farmland has few or no rocks and is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 5 percent. (Source USDA Natural Resources Conservation Service)

PRODUCTIVITY INDEXES - Productivity indexes for grain crops express the estimated yields of the major grain crops grown in Illinois as a single percentage of the average yields obtained under basic management from several of the more productive soils in the state. This group of soils is composed of the Muscatine, Ipava, Sable, Lisbon, Drummer, Flanagan, Littleton, Elburn and Joy soils. Each of the 425 soils found in Illinois are found in Circular 1156 from the Illinois Cooperative Extension Service.
SEASONAL - When used in reference to wetlands indicates that the area is flooded only during a portion of the year.

SHRINK-SWELL POTENTIAL - Indicates volume changes to be expected for the specific soil material with changes in moisture content.

SOIL MAPPING UNIT - A map unit is a collection of soil areas of miscellaneous areas delineated in mapping. A map unit is generally an aggregate of the delineations of many different bodies of a kind of soil or miscellaneous area but may consist of only one delineated body. Taxonomic class names and accompanying phase terms are used to name soil map units. They are described in terms of ranges of soil properties within the limits defined for taxa and in terms of ranges of taxadjuncts and inclusions.

SOIL SERIES - A group of soils, formed from a particular type of parent material, having horizons that, except for texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

SUBSIDENCE - Applies mainly to organic soils after drainage. Soil material subsides due to shrinkage and oxidation.

TERRAIN - The area or surface over which a particular rock or group of rocks is prevalent.

TOPSOIL - That portion of the soil profile where higher concentrations of organic material, fertility, bacterial activity and plant growth take place. Depths of topsoil vary between soil types.

WATERSHED - An area of land that drains to an associated water resource such as a wetland, river or lake. Depending on the size and topography, watersheds can contain numerous tributaries, such as streams and ditches, and ponding areas such as detention structures, natural ponds and wetlands.

WETLAND - An area that has a predominance of hydric soils and that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances does support, a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.

REFERENCES

A Citizens' Guide to Protecting Wetlands. By The National Wildlife Federation. Washington, D.C., March 1989

Agricultural Areas Inventory
McHenry County Soil & Water Conservation District

FIRM - Flood Insurance Rate Maps for McHenry County. Prepared by FEMA - Federal Emergency Management Agency.

Flood of Record (Hydrologic Atlas) for McHenry County
U.S. Geologic Survey

Geologic Mapping for Environmental Planning, McHenry County, Illinois. Department of Natural Resources Illinois State Geological Survey, Circular 559, 1997

Geology For Planning in Boone and Winnebago Counties. State Geological Survey Division, Circular 531. 1984

Hydrologic Unit Map for McHenry County.
Natural Resources Conservation Service, United States Department of Agriculture

Hydric Soils of the United States. USDA Natural Resources Conservation Service, 1987.

Illinois Natural Areas Inventory
Illinois Department of Natural Resources

Land Evaluation and Site Assessment System. 2005. The McHenry County Department of Planning and McHenry County Soil and Water Conservation District. In cooperation with: USDS, Natural Resources Conservation Service

McHenry County Advanced Identification of Wetlands (ADID)
Northeastern Illinois Planning Commission

McHenry County Health Code relating to septic system suitability

McHenry County 2030 Land Use Plan
McHenry County Dept. of Planning and Development

McHenry County Natural Areas Inventory
McHenry County Conservation District

McHenry County, Illinois Fire Protection Districts
McHenry County Dept. of Planning and Development

McHenry County, Illinois Historic Landmarks
McHenry County Historic Preservation Committee

Natural Resources Conservation Service Wetland Inventory Map. United States Department of Agriculture

The Conservation of Biological Diversity in the Great Lakes Ecosystem: Issues and Opportunities, prepared by the Nature Conservancy Great Lakes Program 79W. Monroe Street, Suite 1309, Chicago, IL 60603, January 1994

Wetlands - The Corps of Engineers' Administration of the Section 404 Program July 1988 (GAO/RCED-88-110)

Soil Erosion by Water - United States Department of Agriculture Natural Resources Conservation Service. Agriculture Information Bulletin 513.

Soil Survey of McHenry County, Illinois Part 1 and Part 2
Natural Resources Conservation Service, United States Department of Agriculture.