LAKE COUNTY ZONING NOTICE CUP-000998-2024

ANTIOCH TOWNSHIP

The Lake County Zoning Board of Appeals has scheduled a public hearing on September 17, 2024, at 1:00 P.M. at the Lake Villa District Library, 140 N. Munn Rd., Lindenhurst, Illinois, on the petition of Daniel A. Beelow and Donald Hertel Revocable Trust (Donald Hertel, 24025 W Chardon Rd, Grayslake IL, Trustee), record owners, who seek a Conditional Use Permit to establish a Commercial Solar Energy System.

Please note that quantitative values may be subject to minor alterations due to surveyed conditions. The subject property is located at 41125 N IL Route 83, Antioch, Illinois & 23150 W Lake Shore Dr., Antioch, Illinois, and is approximately 38.3 acres.

PIN: 0220200017 & 0217400027

This application is available for public examination online at https://www.lakecountyil.gov/calendar.aspx?EID=11821 or at the office of the Lake County Zoning Board of Appeals, 500 W. Winchester Rd, Libertyville, Illinois, Attn: Thomas Chefalo, Project Manager 847-377-2120

Gregory Koeppen
Chair

nexamp

July 1, 2024

Thomas Chefalo, AICP
Principal Planner
500 W. Winchester Road, Unit
101 Libertyville, IL 60048

Re: Conditional Use Permit – Project Narrative
Proposed 5-MW Commercial Solar Collector

Applicant: Loon Lake Solar, LLC
Location: NE of W. Lake Shore Dr. & N. IL Route 83, Antioch, IL

Dear Mr. Chefalo and other Lake County Staff/Members:

On behalf of Loon Lake Solar, LLC, please find enclosed and below is our:

- Project narrative and with project details
- Conditional Use Permit Application Package:
  - Attachment A: Conditional Use Permit Application
  - Attachment B: Copy of Deed
  - Attachment C: Copy of Memorandum of Lease
  - Attachment D: Disclosure Statement
  - Attachment E: Manufacturer's Specifications
  - Attachment F: ALTA Survey with Property Legal Description
  - Attachment G: Site Plan Set
  - Attachment H: NRI Application (Includes Wetland Delineation Report)
  - Attachment I: FAA Clearance Letters
  - Attachment J: IDOT Correspondence
  - Attachment K: First Fire Protection District Correspondence
  - Attachment L: U.S. Army Corps of Engineers Correspondence
  - Attachment M: Threatened/Endangered Species Reports
  - Attachment N: Cultural Resources Report and SHPO Correspondence
  - Attachment O: Executed AIMA Agreement
- Conditional Use Permit Filing Fee (mailed to Zoning Office)

nexamp

Project Narrative:

Loon Lake Solar, LLC is requesting approval of a Conditional Use Permit to allow for development and operation of a 5MW (AC) ground-mounted distributed generation solar garden facility on the approximate 38.97-acre subject property (PIN: 02-20-200-017, 02-17-400-036, and 02-17-400-027). The arrays would be installed over existing farmland and enclosed with a fenced area for safety and security measures.

Nexamp Background:

In 2007, U.S. Army veterans Will Thompson and Dan Leary realized a vision for making a range of renewable energy options more affordable and accessible to homeowners and businesses throughout the Commonwealth of Massachusetts. The pair launched NexGen Energy Solutions, a turnkey provider of renewable energy and carbon solutions, in their hometown of North Andover, Massachusetts. NexGen became Nexamp later in 2007.

During the early years, Nexamp delivered a variety of energy systems for residential, commercial, municipal and agricultural customers. Energy solutions offered included solar PV, solar thermal, micro-wind, geothermal heating and cooling, and a wide array of energy efficiency services. In 2011, the company began shifting its focus fully toward commercial and industrial solar facilities, working with businesses and municipalities that wanted to offset their traditional utility energy power using on-site renewable solar generation.

2015 marked Nexamp's first Community Solar project and the beginning of a new chapter for the company. Leveraging its integrated approach of developing, building, owning and operating solar plants, Nexamp turned its focus to community solar, and alongside that the mission of making the benefits of solar power available to everyone—homeowners, renters, non-profits, small businesses, farms and more. Nexamp was named NECEC Clean Energy Company of the Year in 2015 and a Solar Power World Top 3 Commercial Solar Developer in 2017.

In 2016, Mitsubishi's Diamond Generating Corporation made a significant investment in Nexamp, and in 2018 the group made an additional investment that gave it a controlling interest. Nexamp secured an additional round of investment in 2021, this time with Generate Capital, a leading clean energy private equity firm. Serving a rapidly expanding network of individuals, property owners, businesses and communities that benefit from its nationally distributed portfolio of solar assets, Nexamp is a Massachusetts-based, nationally headquartered solar company that is laying the groundwork for a cleaner, more secure and resilient energy future. Nexamp entered the Illinois market in 2018, and has since become a market leader, with a large share of the currently operating community solar projects in the state.

nexamp

Project Details:

In your review of this Conditional Use Permit request, we ask that the County consider the following:

I. Project Components:

- Solar modules (i.e. panels) are mounted on racking that slowly rotate and track the sun; there are approximately 10,944 modules proposed to be installed;
- At full tilt, the height of the solar array will be up to 20 feet in height;
- The solar modules are treated with anti-reflective coating to minimize glare;
- The racking is mounted to metal piles. Concrete foundations are not anticipated;
- The system will be remotely monitored, meaning there will be little traffic generated;
- Electrical cables will be installed underground for the entire project with exception of a series of poles necessary to interconnect with ComEd along the east side of existing substation;
- Perimeter security fencing up to eight feet height;
- Location of proposed structures is in compliance with County setback requirements;
- Existing drainage patterns will be maintained throughout the site to the maximum extent possible;
- Limited area of gravel driveway for site access and maintenance;
- The inverter and transformer with be located on a fenced-in concrete equipment pad;
- Disturbed areas will be re-vegetated with a pollinator friendly seed mix;

II. Construction:

- Estimated approximately 20 to 30 jobs will be created during construction;
- Most jobs will be local but some may be brought in if the skill set required is not available;
- Typical jobs created include construction jobs - i.e. equipment operators, electricians, fence installers, laborers and construction managers;

III. Development Schedule:

- Anticipated construction start is Spring 2025, depending on a number of factors;
- Duration of construction is typically +/- six months;

IV. Traffic:

- Construction traffic will typically be standard semi-tractor trailers – oversized loads are not anticipated;
- At the start of construction there may be a half dozen deliveries a day and will then taper off to one to two delivery trucks per day;
- There will be proximately 15 – 25 employees at a time during construction;

COMMERCIAL SOLAR ENERGY SYSTEMS
APPROVAL CRITERIA

Describe how your application meets the following criteria:

1. *Fencing.* Commercial solar energy systems shall be enclosed with an approved fence that restricts access to the public. Such fencing shall, at a minimum, encompass the entire system's facility, contain a locking mechanism, and be subject to the fence regulations of Lake County Code Section 151.113(L)(1). The maximum height of fences surrounding commercial solar energy systems shall be eight feet.

   The fence height will adhere to Lake County regulations of 8 feet. Please see sit plan sets starting on page 6.

2. *Height.* The total height of the panels shall not exceed 20 feet, as measured from grade to the highest point of the solar arrays when the solar energy facility's arrays are at full tilt.

   The total height of the panels shall not exceed 20 feet. Please see site plan sets starting on page 7.

3. *Location and setbacks.* Commercial solar energy systems must meet the setback requirements for a principal structure in the underlying zoning district or be waived by the written consent of the owner(s) of each affected nonparticipating property.

   The setback requirements are met for principal structures in the underlying zoning district. Please see site plan sets starting on page 5.

4. *Decommissioning plan and assurances*. Applicant (or owner, if different from applicant) must submit a decommissioning plan with cost estimation to the County as part of the siting application and provide testimony supporting the calculation of costs provided in said plan during the public hearing on the application.

   Please see Attachment I for Decommissioning Plan/Cost Estimate.

nexamp

LOON LAKE SOLAR, LLC - DECOMMISSIONING PLAN

Loon Lake Solar, LLC has prepared this Decommissioning Plan (the "Plan") for its proposed 5.00-megawatt (AC) solar photovoltaic facility (the "Facility") to be constructed approximately 760 feet north of the intersection between Illinois Route 83 and West Beach Grove Road Antioch, IL 60002 (PINs: 0220200017, 0217400036, 0217400027). The Plan describes the process for decommissioning the Facility in accordance with applicable federal, state, and local requirements. These requirements include the Lake County Zoning Ordinance and the Illinois Department of Agriculture's (IDOA) Standard Agricultural Impact Mitigation Agreement (AIMA), which has been negotiated between Loon Lake, LLC and the IDOA. Decommissioning of the Facility shall be completed within twelve (12) months after operation of the Facility is deemed non-operational.

Facility Description

The Facility will consist of a 5.00-megawatt (AC) capacity solar power-generating array secured within a fixed knot fence surrounding the solar panels and equipment, accessed through a locked 20-foot-wide swing gate on the access road. The access road enters the Project Area off Illinois Route 83. The Facility will include the following site features:

- An approximate 38.97-acre parcel on which the Facility is located;
- An approximate 18.5-acre area of photovoltaic (PV) modules and mounting system;
- An approximate 22.4-acre area within the fixed knot farm fence;
- Screw or driven piles supporting the PV modules;
- One (1) transformer (filled with biodegradable mineral oil) and two (2) string inverters;
- Up to eight(8)- foot fixed knot farm security fence with no barbed wire;
- Underground conduit and wires within the system area;
- Three (3) aboveground wooden utility poles (owned by Loon Lake, LLC);
- Overhead wires at the poles needed to interconnect to the utility electrical grid;
- A gravel access drive; and
- A metal security gate at the entrance to the array area

Decommissioning Plan

The Facility will be decommissioned by completing the following major steps: Dismantlement, Demolition, Disposal or Recycle; and Site Stabilization, as further described below.

Dismantlement, Demolition, and Disposal or Recycle

A significant portion of the components that comprise the Facility will include recyclable or re-saleable components, including copper, aluminum, galvanized steel, and modules. Due to their re-sale monetary value, these components will be dismantled, disassembled, and recycled rather than being demolished and disposed of. All materials associate with the solar facility shall be removed from the site and legally disposed of or recycled.

Following coordination with the Utility regarding timing and required procedures for disconnecting the Facility from the utility distribution network, all electrical connections to the system will be disconnected and all connections will be tested locally to confirm that no electric current is present before proceeding. All electrical connections to the PV modules will be severed at each module, and the modules will then be removed from their framework by cutting or dismantling the connections to the supports. Modules will be removed and sold to a purchaser or recycler. In the event of a total fracture of any modules, the interior materials are silicon-based and are not hazardous. Disposal of these materials at a landfill will be permissible.

The PV mounting system framework (tracking system) will be dismantled and recycled. The metal piles will be removed and recycled. All other associated structures will be demolished and removed from the site for recycling or disposal. This will include the site fence and gates, which will likely be reclaimed or recycled.

The driveway and all gravel areas will be removed. These areas will be restored to their original condition, which includes, ripping, respreading topsoil, and seeding. Concrete slabs will be crushed and disposed of off-site or recycled (reused off-site). Underground cabling at a depth of five (5) feet or less will be removed and recycled or disposed of. Underground cabling installed at a depth greater than five (5) feet may be abandoned in place or removed. For the purposes of this estimate, removal of underground cabling is assumed.

Aboveground utility poles owned by Loon Lake Solar, LLC will be completely removed and disposed of off-site in accordance with utility best practices. Any overhead wires will be removed from the Facility and will terminate at the utility-owned connections. Coordination with the Utility personnel will be conducted to facility removal of any utility-owned equipment, poles, and overhead wires located on the site.

A final site walkthrough will be conducted to remove debris and/or trash generated during the decommissioning process and will include removal and proper disposal of any debris that may have been wind-blown to areas outside the immediate footprint of the facility being removed. Sanitary facilities will be provided on-site for the workers performing the decommissioning of the Facility.

Decommissioning Requirements

The following items shall be implemented during the decommissioning of the Facility:

- Within twelve (12) months from when deemed nonoperational, all solar collectors and components, aboveground improvements, outside storage, foundations, pads, and underground electrical wires will be removed. Hazardous material will be removed and disposed of in accordance with federal and state law.
- If underground drainage tiles are damaged by Deconstruction, they shall be repaired in a manner that assures the tile line's proper operation.
- After the topsoil has been replaced, all areas that are not directly under photovoltaic panels that were traversed by vehicles and Deconstruction equipment shall be ripped at least 18 inches deep, and all pasture and woodland shall be ripped at least 12 inches deep to the extent practicable. The existence of tile lines or underground utilities may necessitate less depth.
- Following the completion of Deconstruction, the disturbed area shall be restored, as closely as practical, to its original pre-construction elevation.
- If the Deconstruction interrupts an operational (or soon to be operational} spray irrigation system, coordination with the Landowner shall occur to establish an acceptable amount of time the irrigation system may be out of service.
- Weed control shall be provided in a manner that prevents the spread of weeds onto agricultural land affected by Deconstruction. Spraying shall be done by a pesticide applicator that is appropriately licensed for doing such work in the State of Illinois.

Site Stabilization

The areas of the Facility that are disturbed during decommissioning will be re-graded to establish a uniform slope and stabilized via hydroseeding with a ground treatment, as needed.

Permitting Requirements

Given the size and location of the Facility, several approvals will be obtained prior to initiation of the decommissioning process. Table 1 provides a summary of the expected approvals if the decommissioning were to take place at the time of the preparation of this Decommissioning Plan. Noting that the decommissioning is expected to occur at a much later date, the permitting requirements listed in the table below will be reviewed at that time and updated based on then current local, state, and federal regulations.

Table 1. Current Permitting Requirements for Decommissioning

Permit	Agency	Threshold/Trigger
National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Activity	Illinois Environmental Protection Agency (IEPA)	Ground disturbance of greater than 1 acre requires preparation of a Stormwater Pollution Prevention Plan, including erosion and sedimentation controls.
Building Permit	Lake County	A building permit must be obtained for any construction, alteration, repair, demolition, or change to the use or occupancy of a building.

The AIMA requires decommissioning to commence once the Facility is out of service or not producing electrical energy for a period of twelve (12) months and be completed within six (6) months from that time. The decommissioning process is estimated to take +/-3 months and is intended to occur outside of the winter season.

Decommissioning Cost Estimate and Surety Proposal

Loon Lake, LLC proposes to provide a decommissioning surety fund to be held by the County and co-owned with Loon Lake, LLC. The fund will provide the requisite capital for solar project decommissioning in the unlikely event that Loon Lake, LLC is unable to meet its contractual obligations for solar project removal and restoration.

Further, Loon Lake, LLC agrees to the following Agricultural Impact Mitigation Agreement decommission requirements: Loon Lake, LLC shall provide the County with Financial Assurance to cover the estimated costs of decommissioning the Facility. Provision of this Financial Assurance shall be phased in over the first 11 years of the Project's operation as follows:

- On or before the first anniversary of the Commercial Operation Date, Loon Lake, LLC shall provide the County with Financial Assurance to cover ten (10) percent of the estimated cost to decommission the facility as determined in this Plan.
- On or before the sixth anniversary of the Commercial Operation Date, Loon Lake, LLC shall provide the County with Financial Assurance to cover fifty (50) percent of the estimated cost to decommission the facility as determined in this Plan.
- On or before the eleventh anniversary of the Commercial Operation Date, Loon Lake, LLC shall provide the County with Financial Assurance to cover one hundred (100) percent of the estimated cost to decommission the facility, as determined in the updated Plan provided during the tenth year of commercial operation.

Prior to the issuance of the Building Permit by Lake County, Loon Lake, LLC is submitting a Decommissioning Engineer's Opinion of Probable Cost that will be used to determine the amount of the Surety.

Once the decommissioning is complete, and after the County's inspection that the work has been done in accordance with the Decommissioning Plan, the portion of the surety not needed to remediate shall be returned to the applicant/lessee.

Table 2 Estimated Decommissioning Expenses – Loon Lake Solar 5 MW(ac) Solar Array

Activity	Unit	Quantity	Cost per Unit	Gross Cost	Potential Salvage Revenue	Net Cost with Salvage	Description of Activity/Methods
Overhead and management rate (incl est permits)	Lump Sum	1	$25,000	$25,000		$25,000	Ten percent (10%) of gross cost estimate. Includes mobilization and permitting.
Solar modules; disassembly and removal	Each	11,184	$5.70	$63,749	$37,802	$25,947	Modules are estimated at 76 lbs each. Modules will be de-energized, removed and stacked on pallets by a 2-person team. A forklift operator will transfer stacked modules onto a truck for transport. Resale of modules would exceed salvage value for first 10 years of project; salvage is considered after year 10.
Tracker disassembly and removal (including electrical disconnection)	Each	117	$760	$88,920	$55,334	$33,586	The two-in-portrait tracking systems are assumed to be approximately 183 feet in length, each supporting 96 modules. After module and electrical cables removal, a crew of 3 laborers and 3 forklift operators will dismantle, and load the steel by forklift to a truck for transport to a salvage facility.
Steel piles/trackers	Each	819	$17.50	$14,333	Included in tracker salvage revenue	$14,333	Steel piles for trackers will be completely removed by an excavator and forklift with a crew of 2 laborers to help cut, stack and guide the process. The piles will be loaded to a truck for transport to a salvage facility.
Inverters and transformers with concrete pads	Two (2) Inverters and one (1) transformer	3	$4,683	$14,049		$14,049	Inverters and transformers will be deactivated, disassembled, and removed, along with the concrete pad foundations. The removal process assumes 2 laborers and 2 forklift operators to move and load the equipment for transport. Equipment may be sold for refurbishment and re-use. If not, they will be salvaged or disposed of at an approved solid waste management facility. Cost is net of salvage.

Activity	Unit	Quantity	Cost per Unit	Gross Cost	Potential Salvage Revenue	Net Cost with Salvage	Description of Activity/Methods
Remove buried cable	Linear Feet	6,100	$1.15	$7,015		$7,015	Underground cable at a depth of less than 5 feet will be removed and salvaged. The process assumes 2 laborers and 1 equipment operator with cable pulling equipment and an excavator. Cost is net of salvage.
Access road excavation and removal	Lump Sum	1	$1,750	$1,750		$1,750	Access roads, approximately 450 feet in length and 15 to 20 feet in width will be removed from the site. The roads will consist of an approximately 18-inch-deep aggregate layer over geo-textile fabric. The aggregate and fabric will be removed, separated and disposed of. Equipment will include a bulldozer, front end loader, and dump truck.
Topsoil replacement and rehabilitation of site	Lump Sum	1	$17,450	$17,450		$17,450	Access road areas will be graded, de-compacted, ripped to 18 inches, and backfilled with native sub- and topsoil, as needed. A crew of 2 laborers and 1 operator will seed the access road and other disturbed areas as needed.
Perimeter fence removal (wildlife)	Linear Feet	6,542	$3.90	$25,514		$25,514	The perimeter wildlife fencing will be removed by a crew of 2 laborers and an excavator. A forklift operator will move the removed materials to a truck for transport to a salvage facility.
Perimeter fence removal (chainlink)	Linear Feet	2,202	$5.80	$12,772		$12,772	The perimeter chainlink fencing will be removed by a crew of 2 laborers and an excavator. A forklift operator will move the removed materials to a truck for transport to a salvage facility.
Generation tie-in electrical line (overhead)	Lump Sum	1.00		$6,000		$6,000	The tie-in transmission line will be approximately 150 feet in length. Unless retained for an alternate use, it will be removed by a crew of electricians, laborers, and equipment operators and loaded to a truck for transport to a salvage facility.Cost is net of salvage.
Total Estimated Decommissioning Cost/(Revenue)				**$276,552**	**($93,136)**	**$183,416**	

nexamp

On behalf of Loon Lake Solar, LLC we thank you in advance for your consideration of our request for approval. We look forward to review of our submittal at the Public Hearing with the Zoning Board of Appeals and Code and Regulation. In the interim, please contact us with any questions regarding our submittal or if any additional information is required.

Sincerely,

Matt Walsh
Director of Business Development
P: 847-212-1585
E: mwalsh@nexamp.com

ATTACHMENT A

Conditional Use Permit Application

LAKE COUNTY ZONING BOARD OF APPEALS

CONDITIONAL USE PERMIT APPLICATION

Applicant: Loon Lake Solar, LLC

Applicant(s):
(please print) _____ Owner(s)

Landowner: Daniel A. Beelow

Subject Property:

Present Zoning: Parcel 02-20-200-017: E, Parcel 02-17-400-027: E, Parcel 02-17-400-036: M-1

Present Use: Parcels 02-20-200-017 and 02-17-400-027: agriculture. Parcel 02-17-400-036: access road

Proposed Use: Solar Energy System

PIN(s): 02-20-200-017, 02-17-400-02, 02-17-400-036

Address: 23150 Lake Shore Drive, 41125 N IL RTE 83, 41157 N IL RTE 83, Antioch IL 60002

Legal description:
(X see deed)

Request: I/we request a conditional use permit be approved to allow:

The proposed use is a Solar Energy System which is currently planned to generate electrical energy from solar energy through the use of approximately 11,712 Solar Panel modules installed over approximately 38.97acres. The system is designed to generate 5,000 kilo-watts (kW) alternating current (AC) at peak production. The panels will be mounted on a single-axis tracking system which will tip the panels to the east in the morning and slowly rotate to follow the sun throughout the day to increase efficiency. The site will also contain electrical equipment (inverters/transformers), an access drive, and a generation tie-in line to connect to the existing electrical distribution system. The site will be seeded with low-profile native plant species.

Explain why this conditional use permit is justified:

The proposed project will not be injurious to the use and enjoyment of other property in the immediate vicinity. The proposed special use will be a passive and quiet development that will not generate substantial noise, traffic, or activity. Once operational, the project is not anticipated to require additional development or construction. After construction, the proposed special use will not generate traffic or activity aside from a few maintenance trips per year. For these reasons, the establishment of this special use will not present any adverse impacts to the other neighboring properties.

The proposed special use has also been designed to conform with the setback and screening regulations of that are set forth under the subject property's E zoning district classification.

APPLICANT INFORMATION

Owner (include all fee owners listed on deed):		**Authorized Agent:** I/we hereby authorize this person to represent me/us in all matters related to this application:	
Name:	Donald Hertel, as trustee of the Donald Hertel Revocable Trust & Daniel A. Beelow	Name:	Matthew Clementi
Address:	21400 W IL Route 60	Address:	12080 Corporate Parkway, Suite 200,
State/Zip:	Mundelein, IL 60060	State/Zip:	Mequon, WI 53092
Daytime Phone:	[redacted]	Daytime Phone:	[redacted]
Email:		Email:	

Lessee

Applicant (if other than owner):		**Contract ~~Purchaser~~** (if any):	
Name:	Loon Lake Solar, LLC	Name:	Loon Lake Solar, LLC
Address:	101 N. Wacker Dr, Suite 200	Address:	101 N. Wacker Dr, Suite 200
State/Zip:	Chicago, Il 60606	State/Zip:	Chicago, Il 60606
Daytime Phone:	[redacted]	Daytime Phone:	[redacted]
Email:		Email:	

I/We hereby attest that all information given above is true and complete to the best of my/our k[redacted]onald Hertel, as trustee of the onald Hertel Revocable Trust

[redacted] Daniel A Beelow

Owner's Signature Owner's Signature

Loon Lake Solar, LLC
Christopher F. Clark, SVP

Signature(s) of contract ~~purchasers~~ (If applicable)
Lessee

I, [signature] a Notary Public aforesaid, do hereby certify that Donald Hertel, as trustee of the Donald Hertel Revocable Trust personally known to me is (are) the person(s) who executed the foregoing instrument bearing the date of 8/15/2023 and appeared before me this day in person and acknowledged that he/she/they signed, sealed and delivered the same instrument for the uses and purposes therein set forth.
Given under my hand and Notarial Seal this 15th day of August, 2023.

My Commission expires 9/28/2024

(Seal)

OFFICIAL SEAL
CARRIE A COSTA
NOTARY PUBLIC, STATE OF ILLINOIS
My Commission Expires 9/28/24

APPLICANT INFORMATION

Owner (include all fee owners listed on deed):		**Authorized Agent:** I/we hereby authorize this person to represent me/us in all matters related to this application:	
Name:	Donald Hertel, as trustee of the Donald Hertel Revocable Trust & Daniel A. Beelow	Name:	Matthew Clementi
Address:	21400 W IL Route 60	Address:	12080 Corporate Parkway, Suite 200,
State/Zip:	Mundelein, IL 60060	State/Zip:	Mequon, WI 53092
Daytime Phone:	[redacted]	Daytime Phone:	[redacted]
Email:		Email:	

Applicant (if other than owner):		**Contract ~~Purchaser~~** (if any):	
Name:	Loon Lake Solar. LLC	Name:	Loon Lake Solar. LLC
Address:	101 N. Wacker Dr, Suite 200	Address:	101 N. Wacker Dr, Suite 200
State/Zip:	Chicago, Il 60606	State/Zip:	Chicago, Il 60606
Daytime Phone:	[redacted]	Daytime Phone:	[redacted]
Email:		Email:	

I/We hereby attest that all information given above is true and complete to the best of my/our knowledge.

Donald Hertel, as trustee of the Donald Hertel Revocable Trust

Owner's Signature

[redacted]

Lessee

Daniel A Beelow

Owner's Signature

I, Brianna Rainville a Notary Public aforesaid, do hereby certify that Christopher F. Clark, Senior Vice Present of Loon Lake Solar, LLC personally known to me is (are) the person(s) who executed the foregoing instrument bearing the date of August 1, 2023 and appeared before me this day in person and acknowledged that he/she/they signed, sealed and delivered the same instrument for the uses and purposes therein set forth.

Given under my hand and Notarial Seal this 1st day of August, 2023

(Seal)

My Commission expires 2/3/2028 [redacted]

BRIANNA RAINVILLE
Notary Public
Commonwealth of Massachusetts
My Commission Expires
February 3, 2028

COURT REPORTER AGREEMENT

CHECK ONE OF THE FOLLOWING:

☒ I authorize the County to act on my behalf to retain a Certified Shorthand Reporter to transcribe the public hearing and provide a transcript to the Zoning Board of Appeals. I further agree to pay the Reporter reasonable fees for his/her services. If I do not pay the Reporter and the County is invoiced and pays the Reporter, I agree to reimburse the County. If the County sues to obtain reimbursement, I agree to pay the County its reasonable attorney's fees in bringing suit and obtaining a judgment.

☐ I will furnish a Certified Shorthand Reporter to transcribe the public hearing and provide a transcript to the Zoning Board of Appeals. I realize that the failure to do so may result in the continuation of the public hearing in which case I agree to reimburse the County for all additional expenses caused by such continuation.

Loon Lake Solar, LLC

[redacted]

Signature

Billing Contact Information:

Christopher F. Clark, SVP

Print Name

[redacted]

Phone Number

THIS SIGNED AGREEMENT MUST ACCOMPANY YOUR APPLICATION

ATTACHMENT B

Copy of Deed

TRUSTEE'S DEED

2888232

(1) 513436 AD

The above space for recorders use only

This Indenture, Made this 19th day of March, 19 90, between State Bank of Antioch, Antioch, Illinois, duly organized and existing as an Illinois banking corporation under the laws of the State of Illinois, and duly authorized to accept and execute trusts within the State of Illinois, not personally, but as Trustee under the provisions of a Deed or Deeds in Trust duly recorded and delivered to said bank in pursuance of a certain Trust Agreement dated the 10th day of June, 19 88 and known as Trust Number 88-124 party of the first part, and

Daniel A. Beelow, individually and Donald J. Hertel, married to Mary K. Hertel

of 21400 W. Hwy. 60, Mundelein, IL 60060 (Address of Grantee), party of the second part.

Witnesseth, that said party of the first part, in consideration of the sum of Ten and no/100ths dollars ($10.00), and other good and valuable considerations in hand paid, does hereby grant, sell, and convey unto said party of the second part, the following described real estate situated in Lake County, Illinois, to-wit:

SCHEDULE A
Parcels 1 & 2 & 3
As attached

COUNTY OF LAKE
Real Estate Transfer Tax
$ 100.00 PAID

STATE OF ILLINOIS
REAL ESTATE TRANSFER TAX
MAR 27 '90
DEPT OF REVENUE
200.00

together with the tenements and appurtenances thereunto belonging.

To Have and to Hold the same unto said party of the second part, and to the proper use, benefit and behoof forever of said party of the second part.

Subject to:

This deed is executed by the party of the first part, as Trustee, as aforesaid, pursuant to and in the exercise of the power and authority granted to and vested in it by the terms of said Deed or Deeds in Trust and the provisions of said Trust Agreement above mentioned, and of every other power and authority thereunto enabling, SUBJECT, HOWEVER, to: the liens of all trust deeds and/or mortgages upon said real estate, if any, of record in said county; all unpaid general taxes and special assessments and other liens and claims of any kind; pending litigation, if any, affecting the said real estate; building lines; building, liquor and other restrictions of record, if any; party walls, party wall rights and party wall agreements, if any; Zoning and Building Laws and Ordinances; mechanic's lien claims, if any; easements of record, if any; and rights and claims of parties in possession.

In Witness Whereof, said party of the first part has caused its corporate seal to be affixed, and has caused its name to be signed to these presents by its Trust Officer and attested by its Vice President, the day and year first above written.

STATE BANK OF ANTIOCH
As Trustee as aforesaid,

[redacted]

This instrument was prepared by:
Name Debra L. Pokorney
STATE BANK OF ANTIOCH
Address 440 Lake Street
Antioch, IL 60002

By

Attest:

Mail Deed ~~and subsequent tax bills~~ to: (Name) ANDREW C. LYNCH
(Address) 397 LAKE
ANTIOCH, IL 60002

CHICAGO TITLE INSURANCE CO.

Revenue stamps and riders affixed here.

Document Number

STATE OF ILLINOIS }
COUNTY OF LAKE } ss. I, the undersigned, Debra L. Pokorney

A Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY, that Carolyn J. Blanchette A.V.P. & Trust Officer of the State Bank of Antioch and Roger V. Manderscheid Executive Vice President of said Company, personally known to me to be the same persons whose names are subscribed to the foregoing instrument as such Trust Officer and Executive Vice President respectively, appeared before me this day in person and acknowledged that they signed and delivered the said instrument as their own free and voluntary act, and as the free and voluntary act of said Company, for the uses and purposes therein set forth; and the said Executive Vice President did also then and there acknowledge that said Executive Vice President, as custodian of the corporate seal of said Company, did affix the said corporate seal of said Company to said instrument as said Executive Vice President's own free and voluntary act, and as the free and voluntary act of said Company, for the uses and purposes therein set forth.

Given under my hand and Notarial Seal this 19th day of March, 19 90

Notary Public.

"OFFICIAL SEAL"
DEBRA L. POKORNEY
Notary Public, State of Illinois
My Commission Expires 11/15/92

2888232

RECORDER
LAKE COUNTY, ILL.
1990 MAR 22 PM 2:50

TRUSTEE'S DEED

Box

STATE BANK OF ANTIOCH
As Trustee under Trust Agreement
TO

Property Address:

TRUST DEPARTMENT
STATE BANK OF ANTIOCH
440 W. LAKE STREET
ANTIOCH, IL. 60002

SCHEDULE A
Parcels 1 & 2 & 3

PARCEL 1: THAT PART OF THE SOUTH 13 CHAINS (858.0 FEET) OF THE SOUTH EAST 1/4 OF SECTION 17 AND THAT PART OF THE NORTH 1/2 OF THE NORTH EAST 1/4 OF SECTION 20, TOWNSHIP 46 NORTH, RANGE 10, DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTH EAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE NORTH 89 DEGREES 24 MINUTES 13 SECONDS EAST ALONG THE NORTH LINE OF SAID SOUTH 13 CHAINS A DISTANCE OF 970.59 FEET; THENCE SOUTH 0 DEGREES 35 MINUTES 47 SECONDS EAST A DISTANCE OF 40.0 FEET; THENCE SOUTH 53 DEGREES 35 MINUTES 8 SECONDS EAST A DISTANCE OF 330.67 FEET; THENCE SOUTH 8 DEGREES 2 MINUTES 58 SECONDS EAST A DISTANCE OF 290.48 FEET; THENCE SOUTH 0 DEGREES 0 MINUTES 13 SECONDS WEST A DISTANCE OF 944.45 FEET TO A POINT 200.00 FEET (MEASURED A RIGHT ANGLES) NORTH OF THE NORTH LINE OF LOT "A" IN LONG BEACH SUBDIVISION; BEING A SUBDIVISION OF SECTIONS 20 AND 21 IN AFORESAID TOWNSHIP 46 NORTH, RANGE 10, ACCORDING TO THE PLAT THEREOF RECORDED JUNE 20, 1929, AS DOCUMENT 338781 IN BOOK "T" OF PLATS, PAGES 82 AND 83; THENCE WESTERLY ALONG LINES WHICH ARE PARALLEL WITH AND 200.00 FEET NORTHERLY OF THE NORTH LINE OF SAID LOT "A" TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS.

PARCEL 3: THE NORTH 40.0 FEET OF THE SOUTH 13 CHAINS (858.0 FEET) OF THE SOUTH EAST 1/4 OF SECTION 17, TOWNSHIP 46 NORTH, RANGE 10, EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE CENTER LINE OF ILLINOIS ROUTE 83 AND LYING WEST OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY, IN LAKE COUNTY, ILLINOIS.

PARCEL 2: EASEMENT FOR INGRESS AND EGRESS FOR THE BENEFIT OF PARCEL 1, AS ESTABLISHED BY PRESCRIPTION, UPON AND OVER THAT PART OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY NOW COVERED BY A GRAVEL DRIVEWAY, AS SHOWN ON AND LOCATED BY SURVEY ATTACHED AS EXHIBIT TO AFFIDAVIT DATED JANUARY 19, 1989 AND RECORDED FEBRUARY 14, 1989 AS DOCUMENT 2765676, IN LAKE COUNTY, ILLINOIS.

2888232

3

2888232

STATE OF ILLINOIS)
) SS
COUNTY OF LAKE)

Document # MAR - 2 1990

MICHAEL WARREN, being duly sworn on oath, states that he resides at 1026 LAUREN CT. ANTIOCH, IL. That the attached deed is not in violation of Section 1 of Chapter 109 of the Illinois Revised Statutes, as the provisions of this Act do not apply and no plat is required in any of the following instances:

1. The division or subdivision of land into parcels or tracts of 5 acres or more in size which does not involve any new streets or easements of access;
2. The division of lots or blocks of less than 1 acre in any recorded subdivision which does not involve any new streets or easements of access;
3. The sale or exchange of parcels of land between owners of adjoining and contiguous land;
4. The conveyance of parcels of land or interests therein for use as a right of way for railroads or other public utility facilities and other pipe lines which does not involve any new streets or easements of access;
5. The conveyance of land owned by a railroad or other public utility which does not involve any new streets or easements of access;
6. The conveyance of land for highway or other public purposes or grants or conveyances relating to the dedication of land for public use or instruments relating to the vacation of land impressed with a public use;
7. Conveyances made to correct descriptions in prior conveyances;
8. The sale or exchange of parcels or tracts of land following the division into no more than two parts of a particular parcel or tract of land existing on July 17, 1959 and not involving any new steeets or easements of access;
9. The sale of a single lot of less than 5 acres from a larger tract when a survey is made by a registered surveyor; provided, however, that this exemption shall not apply to the sale of any subsequent lots from the same larger tract of land, as determined by the dimensions and configuration of the larger tract on Oct. 1, 1973, and provided also that this exemption does not invalidate any local requirements applicable to the subdivision of land.
Amended by P.A.80-318, Paragraph 1, eff. Oct. 1, 1977.

(10) Not a division but a conveyance of an existing parcel

CIRCLE NUMBER ABOVE WHICH IS APPLICABLE TO ATTACHED DEED.

AFFIANT further states that he makes this affidavit for the purpose of inducing the Recorder of Deeds of Lake County, Illinois, to accept the attached deed for recording.

[redacted]

SUBSCRIBED and SWORN to before me

this 6th day of MARCH, 1990.

[redacted]

2888232

Mary Ellen Vanderventer
Lake County Recorder Of Deeds

Plat Act Affidavit

18 N County St – 6th Floor
Waukegan, IL 60085-4358
Phone: (847) 377-2575
FAX: (847) 984-5860

STATE OF ILLINOIS }
COUNTY OF LAKE } SS

I, (name) DONALD HERTEL, being duly sworn on oath, state that I reside at 24025 W. CHARDON, GRAYSLAKE, IL 60030, and that the attached deed is not in violation of the Plat Act, Ch. 765 ILCS 205/1.1(b), as the provisions of this Act do not apply and no plat is required due to the following allowed exception ***(Circle the number applicable to the attached deed)***:

1. The division or subdivision of land into parcels or tracts of 5 acres or more in size which does not involve any new streets or easements of access;
2. The division of lots or blocks of less than 1 acre in any recorded subdivision which does not involve any new streets or easements of access;
3. The sale or exchange of parcels of land between owners of adjoining and contiguous land;
4. The conveyance of parcels of land or interests therein for use as a right of way for railroads or other public utility facilities and other pipe lines which does not involve any new streets or easements of access;
5. The conveyance of land owned by a railroad or other public utility which does not involve any new streets or easements of access;
6. The conveyance of land for highway or other public purposes or grants or conveyances relating to the dedication of land for public use or instruments relating to the vacation of land impressed with a public use;
7. Conveyances made to correct descriptions in prior conveyances;
8. The sale or exchange of parcels or tracts of land following the division into no more than 2 parts of a particular parcel or tract of land existing on July 17, 1959, and not involving any new streets or easements of access;
9. The sale of a single lot of less than 5 acres from a larger tract when a survey is made by an Illinois Registered Land Surveyor; provided, that this exemption shall not apply to the sale of any subsequent lots from the same larger tract of land, as determined by the dimensions and configuration of the larger tract on October 1, 1973, and provided also that this exemption does not invalidate any local requirements applicable to the subdivision of land;
10. The conveyance of land does not involve any land division and is described in the same manner as title was taken by grantor(s).

AFFIANT further states that this affidavit is made for the purpose of inducing the RECORDER OF LAKE COUNTY, ILLINOIS to accept the attached deed for recording. (This affidavit is not applicable to Facsimile Assignment of Beneficial Interest.)

SUBSCRIBED and SWORN to before me this 18th day of March, 2021

[redacted]
(Signature)

Notary: [redacted] (seal)

"OFFICIAL SEAL"
ROBERT W. CHURCHILL
Notary Public, State of Illinois
My Commission Expires March 15, 2025

Revised: September 7, 2010 11:40 AM

EXHIBIT A
Legal Description
Parcels 1 & 2 & 3

PARCEL 1: That part of the South 13 chains (858.0 feet) of the Southeast ¼ of Section 17 and that part of the North ½ of the Northeast ¼ of Section 20, Township 46 North, Range 10, described as follows: Commencing at the intersection of the North line of the South 13 chains of said Southeast ¼ of Section 17 with the Easterly line of the Minneapolis, St. Paul and Sault Ste. Marie Railway; thence North 89 degrees 24 minutes 13 seconds East along the North line of said South 13 chains a distance of 970.59 feet; thence South 0 degrees 35 minutes 47 seconds East a distance of 40.0 feet; thence South 53 degrees 35 minutes 8 seconds East a distance of 330.67 feet; thence South 8 degrees 2 minutes 58 seconds East a distance of 290.48 feet; thence South 0 degrees 0 minutes 13 seconds West a distance of 944.45 feet to a point 200.00 feet (measured at right angles) North of the North line of Lot "A" in Long Beach Subdivision; being a subdivision of Sections 20 and 21 in aforesaid Township 46 North, Range 10, according to the Plat thereof recorded June 20, 1929, as Document 338781 in Book "T" of Plats, pages 82 and 83; thence Westerly along lines which are parallel with and 200.00 feet Northerly of the North line of said Lot "A" to the Easterly line of said Railway; thence Northerly along said Railway to the point of beginning, in Lake County, Illinois.

PARCEL 3: The North 40.0 feet of the South 13 chains (858.0 feet) of the Southeast ¼ of Section 17, Township 46 North, Range 10, East of the Third Principal Meridian, lying East of the center line of Illinois Route 83 and lying West of the Minneapolis, St. Paul and Sault Ste. Marie Railway, in Lake County, Illinois.

PARCEL 2: Easement for ingress and egress for the benefit of PARCEL 1, as established by prescription, upon and over that part of the Minneapolis, St. Paul and Sault Ste. Marie Railway now covered by a gravel driveway, as shown on and located by survey attached as Exhibit to Affidavit dated January 19, 1989 and recorded February 14, 1989 as Document 2765676, in Lake County, Illinois.

STATE OF ILLINOIS)
) SS
COUNTY OF LAKE)

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that **DONALD SHERTEL**, personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said instrument as his free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and notarial seal this 18th day of March, 2021.

[redacted]
Notary Public

"OFFICIAL SEAL"
ROBERT W. CHURCHILL
Notary Public, State of Illinois
My Commission Expires March 15, 2025

State of Illinois
DEPARTMENT OF REVENUE
STATEMENT OF EXEMPTION UNDER REAL ESTATE TRANSFER TAX ACT

I hereby declare that this deed represents a transaction exempt under provisions of ILCS 200/31-45(e) of the Real Estate Transfer Tax Act.

Dated this _____ day of _____, 2021.

[redacted]
Signature of Buyer-Seller or their Representative

QUITCLAIM DEED

MAIL TO:
Robert W. Churchill
2 South Whitney Street
Grayslake IL 60030

For Recorder's Use Only

Image# 060629120004 Type: DQC
Recorded: 03/31/2021 at 12:06:43 PM
Receipt#: 2021-00031330
Page 1 of 4
Fees: $60.00
IL Rental Housing Fund: $9.00
Lake County IL Recorder
Mary Ellen Vanderventer Recorder
File 7770237

THE GRANTOR, **DONALD J. HERTEL**, of the County of Lake, State of Illinois, for and in consideration of Ten and no/100 ($10.00) Dollars, CONVEYS and QUITCLAIMS to **DONALD HERTEL,** as trustee of **The Donald Hertel Revocable Trust dated February 16, 2021**, of the County of Lake, State of Illinois, the following described Real Estate situated in the County of Lake in the State of Illinois, to wit:

See attached Exhibit A for legal description incorporated herein.

Permanent Index Nos.: 02-20-200-017 and 02-17-400-027

Commonly known as: Vacant land

"OFFICIAL SEAL"
ROBERT W. CHURCHILL
Notary Public, State of Illinois

TO HAVE AND TO HOLD said premises upon the trusts and for the uses and purposes herein and in said trust agreement set forth in **The Donald Hertel Revocable Trust dated February 16, 2021**.

DATED this 18th day of March, 2021.

[redacted] (Seal)
Donald J. Hertel

TRUSTEE'S ACCEPTANCE

I, **DONALD HERTEL, as Trustee,** of the above-described Trust, accept the foregoing conveyance.

DATED this 18th day of March, 2021.

[redacted] (Seal)
Donald Hertel, as Trustee

Donald Hertel, Trustee, 24025 W. Chardon, Grayslake, IL 60030
Name and Address of Grantee

Donald Hertel, Trustee, 24025 W. Chardon, Grayslake, IL 60030
Name and Address of Taxpayer

Robert W. Churchill, 2 South Whitney Street, Grayslake Illinois 60030
Name and Address of Person Preparing this Deed

ATTACHMENT C

Copy of Memorandum of Lease

EXHIBIT D

MEMORANDUM OF OPTION AND GROUND LEASE

This instrument prepared by
and after recording return to:

Schain Banks
70 W. Madison Street, Suite 2300
Chicago, Illinois 60602
Attn: Charles Mangum

MEMORANDUM OF LEASE

THIS MEMORANDUM OF OPTION AND GROUND LEASE (this "**Memorandum**") is made as of 11/17/22 (the "**Effective Date**"), by and between **Donald Hertel, as trustee of the Donald Hertel Revocable Trust dated February 16, 2021 and Daniel A Beelow, as tenants in common** (collectively, the "**Landlord**"), and **Nexamp Solar, LLC**, a Delaware limited liability company (the "**Tenant**").

RECITALS

A. Landlord is the owner of that certain property located at 41125 N IL Route 83, 23150 W Lake Shore Drive and 41157 N IL Route 83 in Lake County, Illinois, as being more particularly described in Exhibit A attached hereto and made a part hereof (the "**Property**").

B. Landlord and Tenant are parties to that certain Option and Ground Lease (as the same may be hereafter amended or modified, the "**Lease**"), dated as of 11/17/22 (the "**Option Effective Date**"), pursuant to which Landlord has agreed to exclusively lease all or a portion of the Property (the "**Lease Area**") and to grant associated easements (the "**Easements**"), as more specifically described in Exhibit B attached hereto and made a part hereof (the "**Lease Area and Easements**").

C. Landlord and Tenant desire to execute and record a memorandum of the Lease.

NOW, THEREFORE, for and in consideration of the foregoing recitals, the Lease and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant hereby represent and acknowledge the following:

1. Recitals and Defined Terms. The recitals set forth hereinabove are fully incorporated into this Memorandum. All capitalized and other terms used but not otherwise defined in this Memorandum shall have the same meaning as set forth in the Lease.

2. Option Term. The Option Period shall begin on the Option Effective Date and will terminate at 11:59 p.m. on the thirty-sixth (36th) month after the Option Effective Date (the "**Option Period**").

3. Lease Term. The Lease will consist of a Development and Construction Period, an Operations Period, and a Decommissioning Period.

(a) Development and Construction Period. The Development and Construction Period will begin at the termination of the Options Period and will terminate on the earliest of:

(i) Delivery by Tenant of notice of termination in accordance with Section 5(b) of the Lease;

(ii) 365 days after the commencement of the Development and Construction Period, except that such Period shall automatically extend for up to two (2) additional periods of six (6) months each for permitting, construction and interconnection delays, or for changes in solar market conditions regarding solar programs promulgated by a Government Authority. Additionally, the Development and Construction Period shall be further extended automatically on a monthly basis for delays by the Utility in the completing interconnection upgrades or in interconnecting the Facility. Upon Landlord's reasonable request, Tenant shall provide evidence that it continues to actively pursue developing the Facility; or

(iii) the day after the Commercial Operation Date.

If the Development and Construction Period terminates by passage of time under Subsection (ii), the Operations Period shall automatically commence with no action being required of either Party. Termination of the Lease in accordance with Section 5(a)(i)(A) or Section 5(a)(i)(B) of the Lease shall not release either Party from any obligations arising prior to the effective date of such termination, but neither Party shall have the obligation to perform any obligations hereunder which, but for such termination, would have arisen after the effective date of such termination.

(b) Operations Period. The Operations Period will commence at 12:01 a.m. on the day after the Development and Construction ends and will end at 11:59 p.m. on the 20th anniversary of the Commercial Operation Date. Tenant may extend the Operations Period, first for one (1) ten (10) year term, and then for one or both of two (2) additional five (5) year terms. Termination of the Lease in accordance with Section 5(b) or Section 5(c) of the Lease shall not release either Party from any obligations arising prior to the effective date of such termination, but neither Party shall have the obligation to perform any obligations hereunder which, but for such termination, would have arisen after the effective date of such termination.

(c) Decommissioning Period. The Decommissioning Period shall begin when the Operations Period and any extensions thereto expire, and shall continue for a period of 180 days, (provided that if such 180 day term begins or ends within the months of December, January, February, March, or April, the Decommissioning Period shall extend to the next-occurring July 31) whereupon this Lease shall expire and shall be of no further force and effect, except that such termination shall not release or modify any of the obligations of the Parties arising prior to such termination.

4. MISCELLANEOUS. THIS MEMORANDUM IS RECORDED SOLELY FOR THE PURPOSE OF GIVING NOTICE TO THIRD PARTIES OF THE LEASE, ALL OF THE PROVISIONS OF WHICH ARE INCORPORATED HEREIN BY REFERENCE WITH THE SAME FORCE AND EFFECT AS IF HEREIN SET FORTH IN FULL. NOTHING CONTAINED IN THIS MEMORANDUM IS INTENDED TO OR DOES MODIFY OR EXPAND IN ANY WAY ANY OF THE TERMS OR PROVISIONS OF THE LEASE, AND THE LEASE SHALL DETERMINE AND GOVERN THE RIGHTS AND DUTIES OF LANDLORD AND TENANT IN ALL RESPECTS.

5. COUNTERPARTS. THIS MEMORANDUM MAY BE EXECUTED BY THE PARTIES ON SEPARATE COUNTERPARTS, EACH OF WHICH SHALL BE DEEMED AN ORIGINAL, BUT ALL OF WHICH, TAKEN TOGETHER, SHALL CONSTITUTE ONE AND THE SAME INSTRUMENT.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, Landlord and Tenant have executed this Memorandum as of the date first above written.

LANDLORD:

Donald Hertel, as trustee of the Donald Hertel Revocable Trust dated February 16, 2021

By: [redacted]
Name: **Donald Hertel, as Trustee**

STATE OF _____)
) SS.
COUNTY OF _____

I, the undersigned, a Notary Public in and for the County and State aforesaid, DO HEREBY CERTIFY that **Donald Hertel, as trustee of the Donald Hertel Revocable Trust dated February 16, 2021**, and personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said instrument in such capacity as aforesaid, as his own free and voluntary act and as the free and voluntary act of said Landlord, for the uses and purposes therein set forth.

GIVEN under my hand and notarial seal this 10th day of October, 2022.

[redacted]
Notary Public

My commission expires: 5/6/2026

Official Seal
Michelle Anne Pearson
Notary Public State of Illinois
My Commission Expires 5/6/2026

By: [redacted]
Name: **Daniel A. Beelow**

STATE OF _____)
) SS.
COUNTY OF _____

I, the undersigned, a Notary Public in and for the County and State aforesaid, DO HEREBY CERTIFY that **Daniel A. Beelow**, and personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said instrument in such capacity as aforesaid, as his own free and voluntary act and as the free and voluntary act of said Landlord, for the uses and purposes therein set forth.

GIVEN under my hand and notarial seal this 10th day of October, 2022.

[redacted]
Notary Public

My commission expires: 5/6/2026

Official Seal
Michelle Anne Pearson
Notary Public State of Illinois
My Commission Expires 5/6/2026

TENANT:

Nexamp Solar, LLC, a Delaware limited liability company

By: [redacted]
Name: Christopher F. Clark
Title: SVP

STATE OF Massachusetts)
) SS.
COUNTY OF Suffolk)

I, the undersigned, a Notary Public in and for the County and State aforesaid, DO HEREBY CERTIFY that Christopher F. Clark, the SVP of Nexamp Solar, LLC, and personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said instrument in such capacity as aforesaid, as his own free and voluntary act and as the free and voluntary act of said company, for the uses and purposes therein set forth.

GIVEN under my hand and notarial seal this 17th day of November, 2022.

[redacted]
Notary Public

My commission expires: 2/3/2028

BRIANNA RAINVILLE
Notary Public
Commonwealth of Massachusetts
My Commission Expires
February 3, 2028

EXHIBIT A

Legal Description of the Property

PARCEL 1:

THAT PART OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 20, TOWNSHIP 46 NORTH, RANGE 10, DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTHEAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE NORTH 89° 24' 13" EAST ALONG THE NORTH LINE OF SAID 13 CHAINS A DISTANCE OF 970.59; THENCE SOUTH 0° 35' 47" EAST A DISTANCE OF 40.0 FEET; THENCE SOUTH 53° 35' 8" EAST A DISTANCE OF 330.67 FEET; THENCE SOUTH 8° 2' 58" EAST A DISTANCE OF 290.48 FEET; THENCE SOUTH 0° 0' 13" WEST A DISTANCE OF 944.45 FEET TO A POINT 200.00 FEET (MEASURED AT RIGHT ANGLES) NORTH OF THE NORTH LINE OF LOT "A" IN LONG BEACH SUBDIVISION; BEING A SUBDIVISION OF SECTIONS 20 AND 21 IN AFORESAID TOWNSHIP 46 NORTH, RANGE 10, ACCORDING TO THE PLAT THEREOF RECORDED JUNE 20, 1929 AS DOCUMENT 338781 IN BOOK "T" OF PLATS, PAGES 82 AND 83; THENCE WESTERLY ALONG LINES WHICH ARE PARALLEL WITH AND 200.00 FEET NORTHERLY OF THE NORTH LINE OF SAID LOT "A" TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY TO THE POINT OF BEGINNING (EXCEPT THAT PART DESCRIBED AS FOLLOWS COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTHEAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE SOUTHERLY ALONG THE EASTERLY LINE OF SAID RAILWAY A DISTANCE OF 60.03 FEET TO THE PLACE OF BEGINNING OF THE PARCEL INTENDED TO BE DESCRIBED: THENCE NORTH 89° 24' 13" EAST PARALLEL WITH THE NORTH LINE OF SAID SOUTH 13 CHAINS A DISTANCE OF 275.0 FEET; THENCE SOUTHERLY PARALLEL WITH THE EASTERLY LINE OF AFORESAID RAILWAY A DISTANCE OF 363.90 FEET; THENCE SOUTH 89° 24' 13" WEST PARALLEL WITH THE NORTH LINE OF SAID SOUTH 13 CHAINS, A DISTANCE OF 275.0 FEET TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY A DISTANCE OF 363.90 FEET TO THE PLACE OF BEGINNING; AND EXCEPT THAT PART DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE EAST LINE OF THE RAILROAD AND THE NORTH LINE OF THE SOUTH 13 CHAINS OF THE SOUTHEAST 1/4 OF SECTION 17, TOWNSHIP 46 NORTH, RANGE 10, THENCE SOUTH ALONG THE EAST LINE OF RAILROAD 60.03 FEET; THENCE EAST 275.0 FEET; THENCE NORTH TO THE NORTH LINE OF THE SOUTH 13 CHAINS; THENCE WEST TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS.

PARCEL 2:

THE NORTH 40.0 FEET (EXCEPTING THE WEST 50.00 FEET OF THE NORTH 40.00 FEET) OF THE SOUTH 13 CHAINS (858.0 FEET) OF THE SOUTHEAST 1/4 OF SECTION 17, TOWNSHIP 46 NORTH, RANGE 10 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE CENTERLINE OF ILLINOIS ROUTE 83 AND LYING WEST OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY, ALSO ALL THAT PART OF ILLINOIS ROUTE 83 LYING WEST OF SAID DESCRIBED PARCELS, IN LAKE COUNTY, ILLINOIS

PARCEL 3:

EASEMENT FOR INGRESS AND EGRESS FOR THE BENEFIT OF PARCEL 1, AS ESTABLISHED BY PRESCRIPTION, UPON AND OVER THAT PART OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY NOW COVERED BY A GRAVEL DRIVEWAY, AS SHOWN ON AND LOCATED BY SURVEY ATTACHED AS EXHIBIT D TO AFFIDAVIT DATED JANUARY 19, 1989 AND RECODED FEBRUARY 14, 1989 AS DOCUMENT 2765676, LAKE COUNTY, ILLINOIS

PARCEL 4:

THAT PART OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 20, TOWNSHIP 46 NORTH, RANGE 10, DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTHEAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE NORTH 89° 24' 13" EAST ALONG THE NORTH LINE OF SAID 13 CHAINS A DISTANCE OF 970.59; THENCE SOUTH 0° 35' 47" EAST A DISTANCE OF 40.0 FEET; THENCE SOUTH 53° 35' 8" EAST A DISTANCE OF 330.67 FEET; THENCE SOUTH 8° 2' 58" EAST A DISTANCE OF 290.48 FEET; THENCE SOUTH 0° 0' 13" WEST A DISTANCE OF 944.45 FEET TO A POINT 200.00 FEET (MEASURED AT RIGHT ANGLES) NORTH OF THE NORTH LINE OF LOT "A" IN LONG BEACH SUBDIVISION; BEING A SUBDIVISION OF SECTIONS 20 AND 21 IN AFORESAID TOWNSHIP 46 NORTH, RANGE 10, ACCORDING TO THE PLAT THEREOF RECORDED JUNE 20, 1929 AS DOCUMENT 338781 IN BOOK "T" OF PLATS, PAGES 82 AND 83; THENCE WESTERLY ALONG LINES WHICH ARE PARALLEL WITH AND 200.00 FEET NORTHERLY OF THE NORTH LINE OF SAID LOT "A" TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS

COMMON ADDRESS: 41125 N IL Route 83, 23150 W Lake Shore Drive and 41157 N IL Route 83 in Antioch, Illinois

PINs: 02-17-400-027; 02-17-400-036 and 2-20-200-017

EXHIBIT B

LEASE AREA AND EASEMENTS DESCRIPTION

Lease Area:

The Lease Area shall mean the Property unless during the Development and Construction Period Tenant determines the boundaries of a portion of the Property to be the final Lease Area by means of a survey, which survey shall then define the Lease Area and shall be an amendment to this Lease as a revised Exhibit B.

Easements:

The Easements shall mean those areas of land and rights thereon described in Section 4 of the Lease. During the Development and Construction Period Tenant may determine the Easements' boundaries by means of a survey, and such survey shall then define the Easements and shall be an amendment to this Lease as a revised Exhibit B.

ATTACHMENT D

Disclosure Statement

Disclosure Statement

Loon Lake Solar, LLC

Names and Address of Officers and Directors of Loon Lake Solar, LLC

- Zaid A. Ashai – 101 Summer Street, Flr 2, Boston, MA 02110
- John Murphy – 101 Summer Street, Flr 2, Boston, MA 02110
- Chris Clark – 101 Summer Street, Flr 2, Boston, MA 02110
- Will Thompson – 101 Summer Street, Flr 2, Boston, MA 02110
- Peter Tawczynski – 101 Summer Street, Flr 2, Boston, MA 02110
- Kamran Idrees – 101 Summer Street, Flr 2, Boston, MA 02110

Name and Address of all shareholders owning interest in excess of 20% of all outstanding stock:

- Nexamp Capital, LLC – 101 Summer Street, Flr 2, Boston, MA 02110

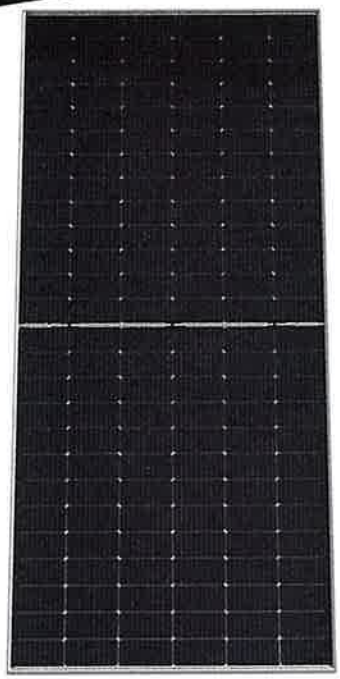
ATTACHMENT E

Manufacturer's Specifications

HELIENE

156HC M10 SL Bifacial Module

156 Half-Cut Monocrystalline 565W – 585W



21%

Utilizes the latest M10 size super high efficiency Monocrystalline PERC cells. Half cut design further reduces cell to module (CTM) losses.

Stability & Looks

Enhanced frame design to withstand higher wind, snow, and other mechanical stresses. Framed Glass–Backsheet aesthetic is ideal for high visibility installation.

Anti-Reflective

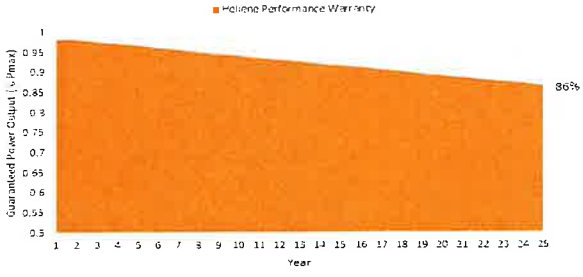
Premium solar glass with anti-reflective coating delivers more energy throughout the day

High Reliability

Proven resistance to PID and reliable in high temperature and humidity environments.

No Compromise Guarantee

15 Year Product Warranty
25 Year Linear Performance Guarantee



Manufactured Using International Quality System Standards: ISO9001

Half-Cut Design with Split Junction Box Technology

Bifacial Technology Enabling Additional Energy Harvest from Rear Side

2% First Year Degradation & 0.50% Annual Power Degradation

World-class Quality

- Heliene's fully automated manufacturing facilities with state-of-the-art robotics and computer aided inspection systems ensure the highest level of product quality and consistency
- All manufacturing locations are compliant with international quality standards and are ISO 9001 certified
- Heliene modules have received Top Performer rankings in several categories from PV Evolution Labs (PV EL) independent quality evaluations

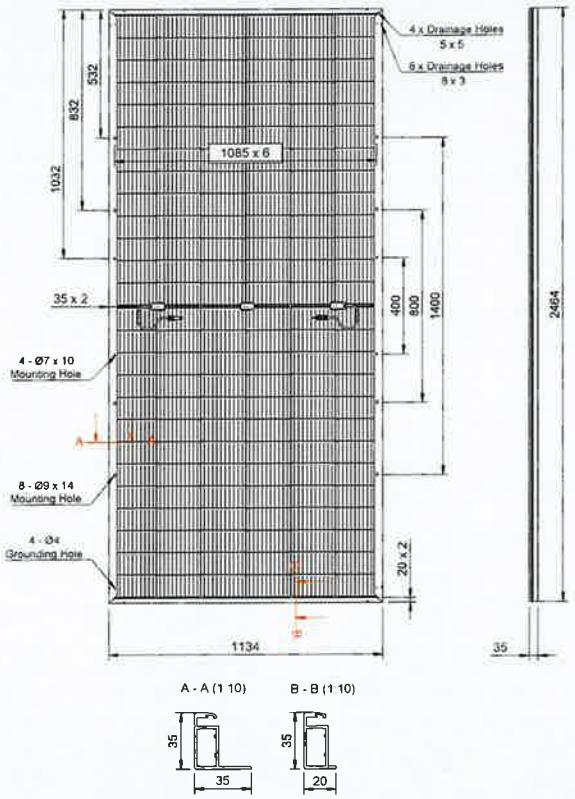
Bankable Reputation

- Established in 2010, Heliene is recognized as highly bankable Tier 1 manufacturer of solar modules and has been approved for use by the U.S. Department of Defense, U.S. Army Corps of Engineers and from numerous top tier utility scale project debt providers
- By investing heavily in research and development, Heliene has been able to stay on the cutting edge of advances in module technology and manufacturing efficiency

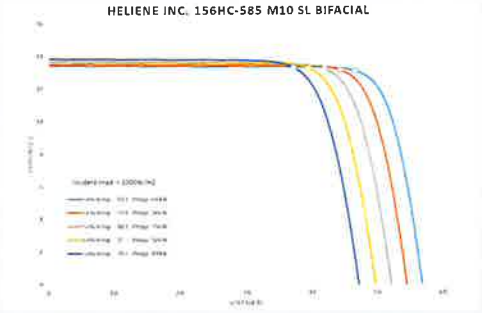
Local Sales, Service, and Support

- With sales offices across the U.S. and Canada, Heliene prides itself on unsurpassed customer support for our clients. Heliene has become the brand of choice for many of the leading residential installers, developers and Independent Power Producers due to our innovative technology, product customization capability and just in time last-mile logistics support
- Local sales and customer support means answered phone calls and immediate answers to your technical and logistics questions. We understand your project schedules often change with little warning and endeavor to work with you to solve your project management challenges

Dimensions for 156HC M10 SL Bifacial Series Modules



I-V Curves for 156HC M10 SL Bifacial Series Modules



Electrical Data (STC)

Peak Rated Power*	P_{mpp} (W)	585	580	575	570	565
Maximum Power Voltage	V_{mpp} (V)	45.85	45.64	45.44	45.23	45.02
Maximum Power Current	I_{mpp} (A)	12.77	12.70	12.64	12.58	12.52
Open Circuit Voltage*	V_{oc} (V)	54.41	54.13	53.86	53.33	52.79
Short Circuit Current**	I_{sc} (A)	13.50	13.44	13.37	13.32	13.28
Module Efficiency	Eff (%)	20.9	20.8	20.6	20.4	20.2
Maximum Series Fuse Rating	MF (A)	30	30	30	30	30
Power Sorting Range			- 0/+3%			
Bifaciality Factor			70 ± 2%			

STC - Standard Test Conditions: Irradiation 1000 W/m² - Air mass AM 1.5 - Cell temperature 25 °C,
*P_{mpp} Production Tolerance ± 3%, V_{oc} Production Tolerance ± 3%, **I_{sc} Production Tolerance ± 4%

Electrical Data (NMOT)

Maximum Power	P_{mpp} (W)	434	430	426	423	419
Maximum Power Voltage	V_{mpp} (V)	43.28	43.08	42.90	42.70	42.50
Maximum Power Current	I_{mpp} (A)	10.03	9.99	9.95	9.91	9.87
Open Circuit Voltage	V_{oc} (V)	51.36	51.10	50.84	50.34	49.83
Short Circuit Current	I_{sc} (A)	10.87	10.83	10.77	10.73	10.70

NMOT - Nominal Module Operating Temperature
Irradiance at 800W/m², Ambient Temperature 20°C, Wind speed 1m/s

Mechanical Data

Solar Cells	156 Half Cut, M10, 182mm, PERC Cells
Module Construction	Framed Glass–Backsheet
Dimensions (L x W x D)	2464 x 1134 x 35 mm (97.01 x 44.65 x 1.38 inch)
Weight	31 kg (68.34 lbs)
Frame	Double Webbed 15-Micron Anodized Aluminum Alloy
Glass	3.2mm Low-Iron Content, High-Transmission, PV Solar Glass with Anti Reflective Coating
Junction Box	IP-68 rated with 3 bypass diodes
Output Cables	1.6-meter Symmetrical Cables
Connectors	Multi-Contact/ Stäubli MC4

Certifications

UL Certification	UL61215, UL61730

Temperature Ratings

Nominal Operating Cell Temperature (NOCT)	+45°C (±2°C)
Temperature Coefficient of P_{max}	-0.34%/°C
Temperature Coefficient of V_{oc}	-0.25%/°C
Temperature Coefficient of I_{sc}	0.052%/°C

Maximum Ratings

Operational Temperature	-40°C to +85°C
Max System Voltage	1500V
Mech. Load Test (Front)	113 psf / 5400Pa
Mech. Load Test (Back)	50 psf / 2400 Pa
Fire Type	Type 1
Hail Test	25mm at 23m/s

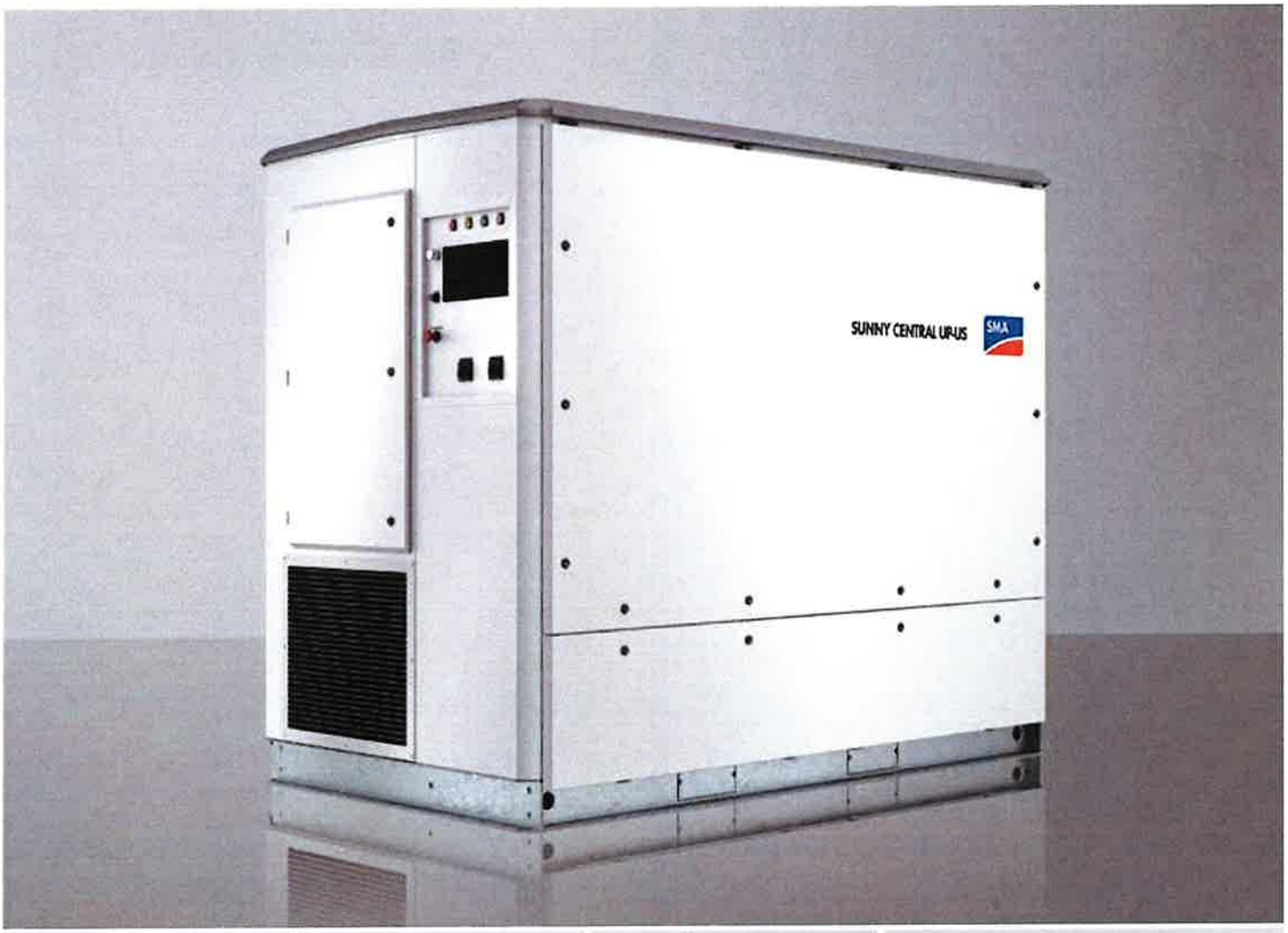
Packaging Configuration

Modules per Pallet 40' Container:	31 pieces
Modules per 40' Container:	620 pieces
Modules per Pallet 53' Trailer:	28 pieces
Modules per 53' trailer:	588 pieces

Warranty

15 Year Product Warranty
25 Year Linear Power Guarantee

SUNNY CENTRAL
4000 UP-US / 4200 UP-US / 4400 UP-US / 4600 UP-US



Efficient

- Up to 4 inverters can be transported in one standard shipping container
- Over-sizing up to 180% is possible
- Full power at ambient temperatures of up to 35 °C

Robust

- Intelligent air cooling system OptiCool for efficient cooling
- Suitable for outdoor use in all climatic ambient conditions worldwide

Flexible

- Conforms to all known grid requirements worldwide
- Q on demand
- DC-coupled storage with optional charging from grid

Easy to Use

- Improved DC connection area
- Connection area for customer equipment
- Integrated voltage support for internal and external loads

SUNNY CENTRAL
4000 UP-US / 4200 UP-US / 4400 UP-US / 4600 UP-US

The new Sunny Central: more power per cubic meter

With an output of up to 4600 kVA and system voltages of 1500 V DC, the SMA central inverter allows for more efficient system design and a reduction in specific costs for PV power plants. A separate voltage supply and additional space are available for the installation of customer equipment. True 1500 V technology and the intelligent cooling system OptiCool ensure smooth operation even in extreme ambient temperature as well as a long service life of 25 years.

SUNNY CENTRAL 4000 UP-US / 4200 UP-US

Technical data	SC 4000 UP-US	SC 4200 UP-US
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	880 to 1325 V / 1050 V	921 to 1325 V / 1050 V
Min. input voltage $V_{DC\ min}$ / Start voltage $V_{DC\ Start}$	849 V / 1030 V	891 V / 1071 V
Max. input voltage $V_{DC\ max}$	1500 V	1500 V
Max. input current $I_{DC\ max}$	4750 A	4750 A
Max. short-circuit current $I_{DC\ sc}$	8400 A	8400 A
Number of DC inputs	24 double pole fused (32 single pole fused)	
Number of DC inputs with optional DC coupling of battery	18 double pole fused (36 single pole fused) for PV, 6 double pole fused for batteries	
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm²	
Integrated zone monitoring	o	
Available PV fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Available battery fuse size (per input)	750 A	
Output (AC)		
Nominal AC power at cos φ =1 (at 35°C / at 50°C)	4000 kVA[11] / 3600 kVA	4200 kVA[11] / 3780 kVA
Nominal AC power at cos φ =0.8 (at 35°C / at 50°C)	3200 kW[11] / 2880 kW	3360 kW[11] / 3024 kW
Nominal AC current $I_{AC\ nom}$ (at 35°C / at 50°C)	3850 A / 3465 A	3850 A / 3465 A
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power
Nominal AC voltage / nominal AC voltage range[1; 8]	600 V / 480 V to 720 V	630 V / 504 V to 756 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	
Min. short-circuit ratio at the AC terminals[9]	> 2	
Power factor at rated power / displacement power factor adjustable[8] [10]	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency[2] / European efficiency[2] / CEC efficiency[3]	98.8% / 98.6% / 98.5%	98.8% / 98.7% / 98.5%
Protective Devices		
Input-side disconnection point	DC load break switch	
Output-side disconnection point	AC circuit breaker	
DC overvoltage protection	Surge arrester, type I	
AC overvoltage protection (optional)	Surge arrester, class I	
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Ground-fault monitoring / remote ground-fault monitoring	o / o	
Insulation monitoring	o	
Degree of protection	NEMA 3R	
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)	
Weight	<3700 kg / < 8158 lb	
Self-consumption (max.[4] / partial load[5] / average[6])	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 370 W	
Internal auxiliary power supply	o Integrated 8.4 kVA transformer	
Operating temperature range (optional)[8]	(–37°C) –25°C to 60°C / (–37°C) –13°F to 140°F	
Noise emission[7]	65.0 dB(A)*	
Temperature range (standby)	–40°C to 60°C / –40°F to 140°F	
Temperature range (storage)	–40°C to 70°C / –40°F to 158°F	
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month/year) / 0% to 95%	
Maximum operating altitude above MSL[8] 1000 m / 2000 m	● / o (earlier temperature-dependent derating)	
Fresh air consumption	6500 m³/h	
Features		
DC connection	Terminal lug on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Modbus Master, Modbus Slave	
Communication with SMA string monitor (transmission medium)	Modbus TCP / Ethernet (FO MM, Cat-5)	
Enclosure / roof color	RAL 9016 / RAL 7004	
Supply transformer for external loads	o (2.5 kVA)	
Standards and directives complied with	UL 62109-1, UL 1741 (Chapter 31, CDR 6I), NERC, UL 1741-SB, UL 1998, IEEE 1547-2018[12], MIL-STD-810G	
EMC standards	FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	

● Standard features o Optional

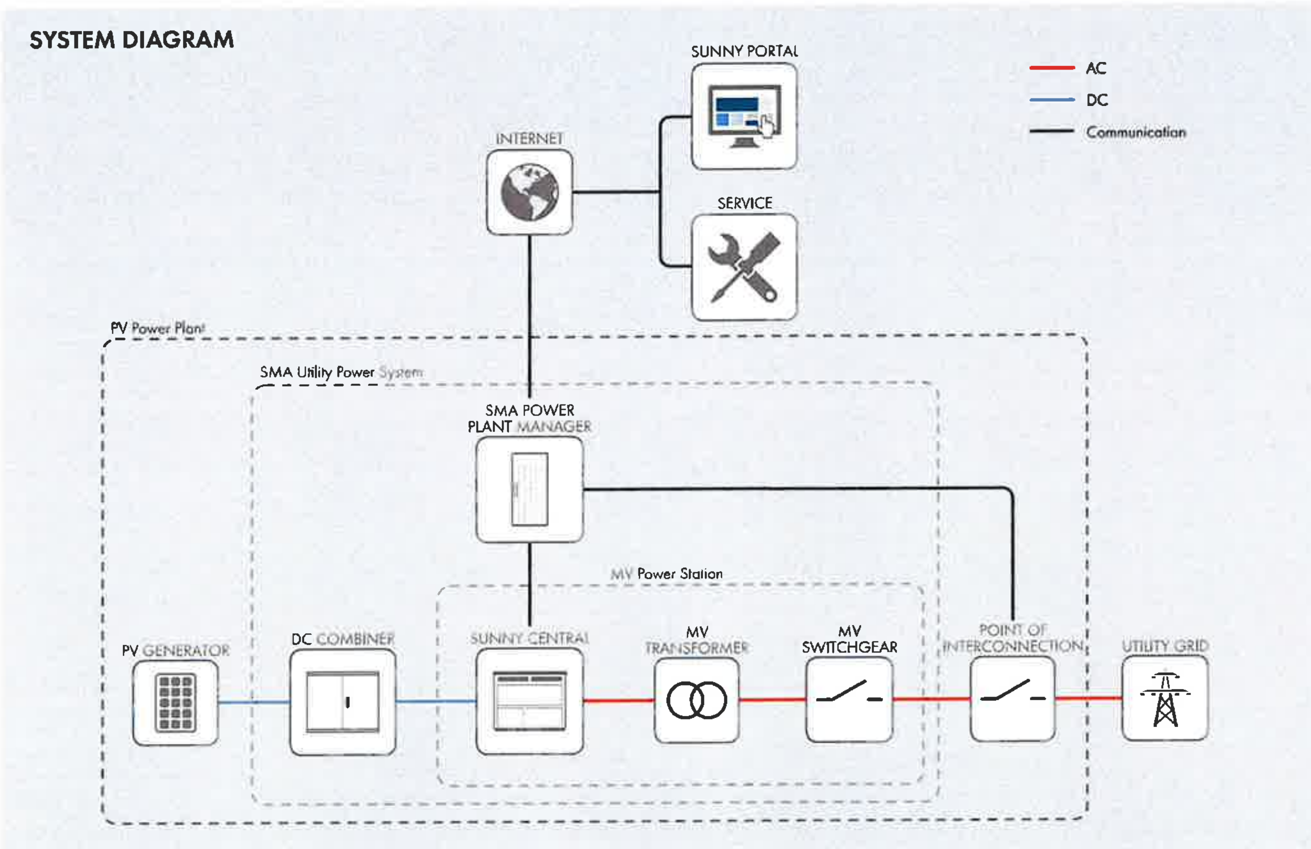
1) At nominal AC voltage, nominal AC power decreases in the same proportion
2) Efficiency measured without internal power supply
3) Efficiency measured with internal power supply
4) Self-consumption at rated operation
5) Self-consumption at < 75% Pn at 25°C
6) Self-consumption averaged out from 5% to 100% Pn at 25°C
7) Sound pressure level at a distance of 10 m
8) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets.
9) A short-circuit ratio of < 2 requires a special approval from SMA
10) Depending on the DC voltage
11) Nominal power at 35°C max DC voltage of 1050 V
12) Harmonics are within IEEE 1547-2018 limits with at least 2 inverters in operation

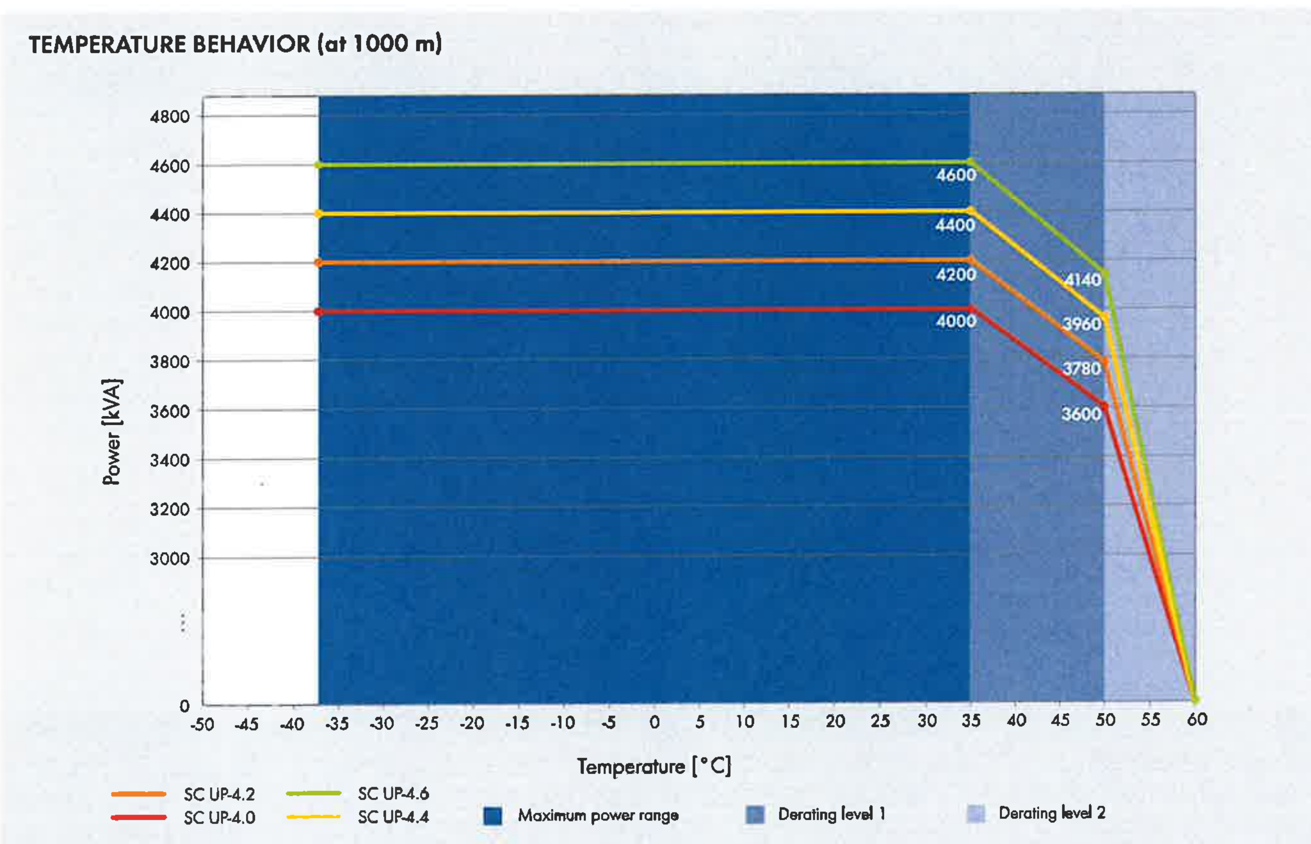
SUNNY CENTRAL 4400 UP-US / 4600 UP-US

Technical data	SC 4400 UP-US	SC 4600 UP-US
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	962 to 1325 V / 1050 V	1003 to 1325 V / 1050 V
Min. input voltage $V_{DC\ min}$ / Start voltage $V_{DC\ Start}$	934 V / 1112 V	976 V / 1153 V
Max. input voltage $V_{DC\ max}$	1500 V	1500 V
Max. input current $I_{DC\ max}$	4750 A	4750 A
Max. short-circuit current $I_{DC\ sc}$	8400 A	8400 A
Number of DC inputs	24 double pole fused (32 single pole fused)	
Number of DC inputs with optional DC coupling of battery	18 double pole fused (36 single pole fused) for PV, 6 double pole fused for batteries	
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm²	
Integrated zone monitoring	o	
Available PV fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Available battery fuse size (per input)	750 A	
Output (AC)		
Nominal AC power at cos φ =1 (at 35 °C / at 50 °C)	4400 kVA[11] / 3960 kVA	4600 kVA[11] / 4140 kVA
Nominal AC power at cos φ =0.8 (at 35 °C / at 50 °C)	3520 kW[11] / 3168 kW	3680 kW[11] / 3312 kW
Nominal AC current $I_{AC,\ nom}$ (at 35 °C / at 50 °C)	3850 A / 3465 A	3850 A / 3465 A
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power
Nominal AC voltage / nominal AC voltage range[1] [8]	660 V / 528 V to 759 V	690 V / 552 V to 759 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	
Min. short-circuit ratio at the AC terminals[9]	> 2	
Power factor at rated power / displacement power factor adjustable[8] [10]	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency[2] / European efficiency[2] / CEC efficiency[3]	98.8% / 98.7% / 98.5%	98.9% / 98.7% / 98.5%
Protective Devices		
Input-side disconnection point	DC load break switch	
Output-side disconnection point	AC circuit breaker	
DC overvoltage protection	Surge arrester, type I	
AC overvoltage protection (optional)	Surge arrester, class I	
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Ground-fault monitoring / remote ground-fault monitoring	o / o	
Insulation monitoring	o	
Degree of protection	NEMA 3R	
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)	
Weight	<3700 kg / < 8158 lb	
Self-consumption (max.[4] / partial load[5] / average[6])	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 370 W	
Internal auxiliary power supply	o Integrated 8.4 kVA transformer	
Operating temperature range (optional)[8]	(–37 °C) –25 °C to 60 °C / (–37 °C) –13 °F to 140 °F	
Noise emission[7]	65.0 dB(A)*	
Temperature range (standby)	–40 °C to 60 °C / –40 °F to 140 °F	
Temperature range (storage)	–40 °C to 70 °C / –40 °F to 158 °F	
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month/year) / 0% to 95%	
Maximum operating altitude above MSL[8] 1000 m / 2000 m	● / o (earlier temperature-dependent derating)	
Fresh air consumption	6500 m³/h	
Features		
DC connection	Terminal lug on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Modbus Master, Modbus Slave	
Communication with SMA string monitor (transmission medium)	Modbus TCP / Ethernet (FO MM, Cat-5)	
Enclosure / roof color	RAL 9016 / RAL 7004	
Supply transformer for external loads	o (2.5 kVA)	
Standards and directives complied with	UL 62109-1, UL 1741 (Chapter 31, CDR 61), NERC, UL 1741-SB, UL 1998, IEEE 1547-2018[12], MIL-STD-810G	
EMC standards	FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	

● Standard features o Optional

1) At nominal AC voltage, nominal AC power decreases in the same proportion
2) Efficiency measured without internal power supply
3) Efficiency measured with internal power supply
4) Self-consumption at rated operation
5) Self-consumption at < 75% Pn at 25 °C
6) Self-consumption averaged out from 5% to 100% Pn at 25 °C
7) Sound pressure level at a distance of 10 m
8) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets.
9) A short-circuit ratio of < 2 requires a special approval from SMA
10) Depending on the DC voltage
11) Nominal power at 35 °C max DC voltage of 1050 V
12) Harmonics are within IEEE 1547-2018 limits with at least 2 inverters in operation



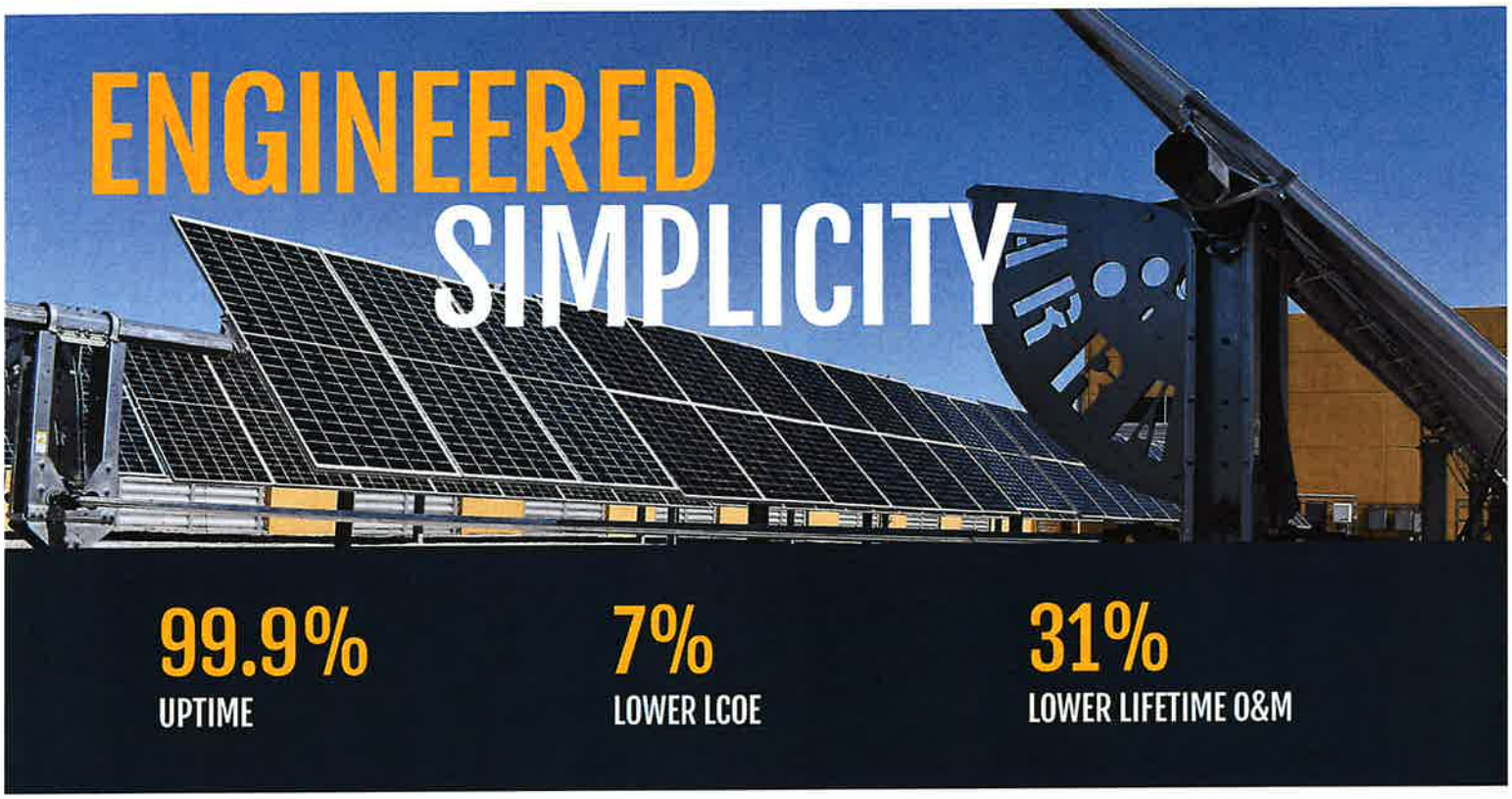


Toll Free +1 888 4 SMA USA
www.SMA-America.com

SMA America, LLC

ARRAY TECHNOLOGIES

FOLLOW THE SUN.
FOLLOW THE LEADER.



Array DuraTrack®

The most durable, reliable tracking system under the sun. While our single-bolt module clamp and forgiving tolerances streamline installation, and our flexibly linked architecture maximizes power density, it's our innovative use of fewer components and a failure-free wind management system that makes Array Technologies the best choice for solar trackers. Better. Stronger. Smarter.

Zero Scheduled Maintenance

Maintenance-free motors and gears, fewer moving parts, and industrial-grade components, means no scheduled maintenance required for our customers. While our competitors average two unscheduled maintenance events per day, we average only one per year.

High Power Density

Higher density means more power and more profit. DuraTrack offers the unique ability to maximize the power density of each site, boasting up to 120 modules per row and higher density than our closest competition.

Failure-free wind management

Nobody can control the weather, but DuraTrack self-manages wind events to power through even the harshest storms.

Fewer Components. Greater Reliability.

Array was founded on a philosophy of engineered simplicity. Minimizing potential failure points. With fewer components than competitors, DuraTrack consistently delivers higher reliability and superior uptime.

ARRAY TECHNOLOGIES

FOLLOW THE SUN. FOLLOW THE LEADER.

IEC PTL US CERTIFIED

COST VERSUS VALUE

Value is more than the cost of a tracking system. It's about building with forgiving tolerance and fewer parts so construction crews can work efficiently. It means protecting your investment with a failure-free wind management system. It also includes increasing power density. But most of all, value is measured in operational uptime, or reliability.

THE GLOBAL LEADER IN RELIABILITY

Maintenance-free motors and gears, fewer moving parts, and industrial-grade components, means no scheduled maintenance required for our customers. While our competitors average two unscheduled maintenance events per day, we average only one per year.

ARRAY TECHNOLOGIES, INC.

3901 Midway Place NE
Albuquerque, NM 87109 USA

+1 505.881.7567
+1 855.TRACKPV (872.2578)
+1.505.881.7572

sales@arraytechinc.com
arraytechinc.com

30+ GW YEARS OF OPERATION

NEARLY **200x** FEWER ELECTRICAL COMPONENTS PER 100MWAC THAN DECENTRALIZED TRACKERS

STRUCTURAL & MECHANICAL FEATURES/SPECIFICATIONS

Tracker Type	Horizontal single axis (1 module in portrait)
Ground Cover Ratio (GCR)	Site configurable. Typical: 28-45%
Linked Rows per Drive Motor	Up to 32
Drive Type	Rotating gear drive connected by drivelines (no driveline or bearing lubrication required)
Array Height	Torque Tube Elevation: 54" standard, adjustable (48" min height above grade)
Tracking Range of Motion	+/- 52°
Terrain Flexibility (N-S)	Up to 8.5° standard (up to 15° optional)
Terrain Flexibility (E-W)	Up to 25° combined angle
Wind Protection	Autonomous passive mechanical system No sensors or grid power required to activate
Max Wind Speed	140mph (225 km/h) per ASCE 7-10 (3-second gust), higher wind speeds possible depending on project conditions
Operating Temp Range	Standard: -4°F to 140°F (-20°C to 60°C) Optional: -40°F to 104°F (-40°C to 40°C)
Materials	Pre-galv steel, HDG steel and aluminum structural members, as required.
Codes and Standards	Certified to UL 3703 and IEC 62817

MODULE COMPATIBLITY

c-Si Modules per Row (1500V DC)	Typical: 84-112 Maximum: 120
First Solar Modules per Row (1500V DC)	Series 6 Plus: 84-108 Series 7: 96-114
Modules Supported	Most commercially available, including framed or frameless crystalline, thin film, bifacial, and back rails
Module Attachment	Single fastener, high-speed mounting clamps with integrated grounding. Traditional rails for crystalline in landscape, custom racking for thin film and frameless crystalline and bifacial per manufacturer specs.

CONTROL SYSTEM DETAILS

Baseline Solar Tracking Method	SANDIA's Ephemeris Model
Control Electronics	SmarTrack™ Controller Site Data Controller 6X Motor Controllers
Communications	MODBUS TCP
Backtracking	Yes (Optional terrain adaptive backtracking with SmarTrack)
Diffuse Light Response	Optional with SmarTrack
Night-time Stow	Yes (configurable)
Tracking Accuracy	+/- 2°
Motor Type	2HP, 3 Phase, 480V AC

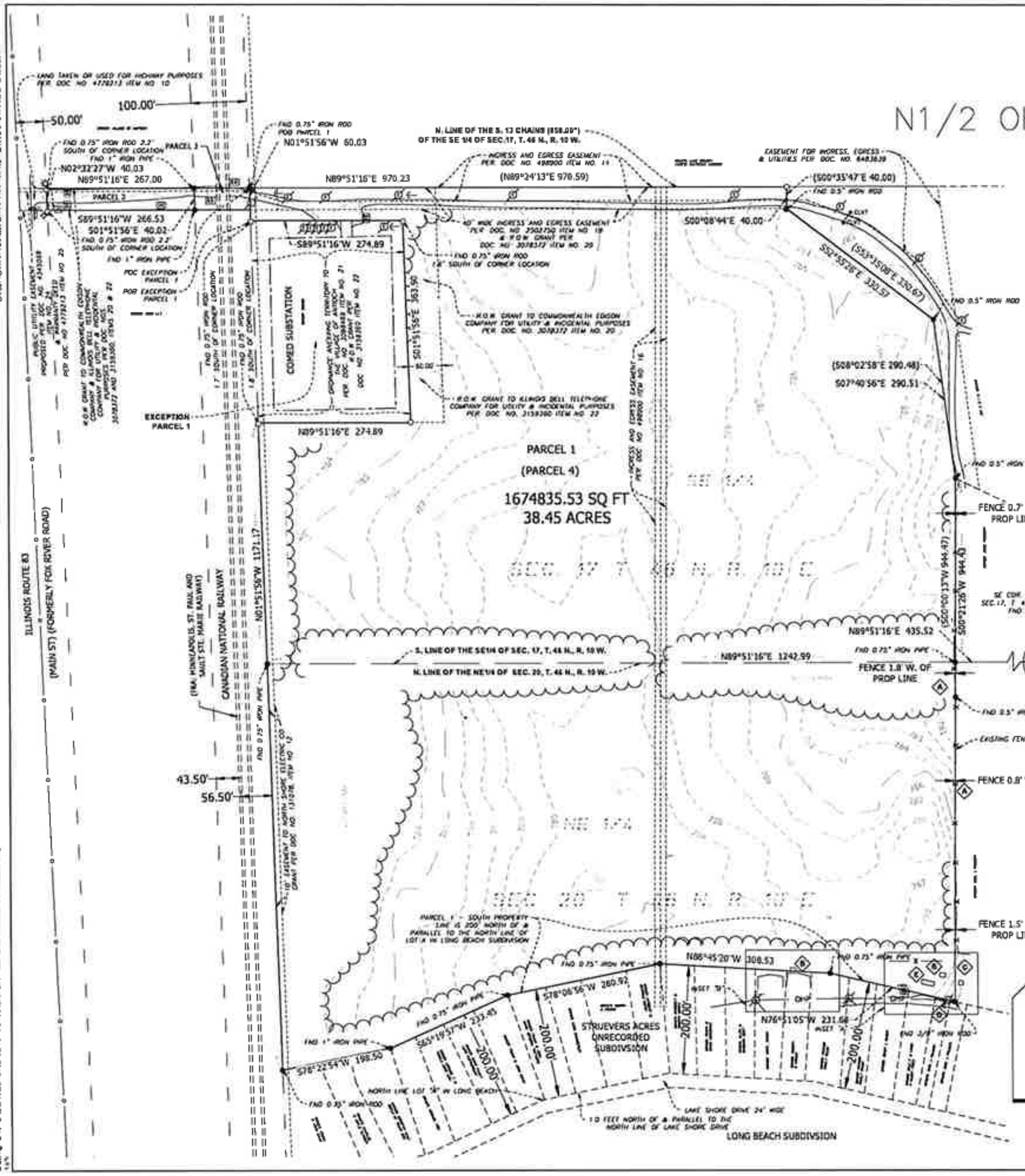
INSTALLATION, OPERATION, AND MAINTENANCE

Annual Power Consumption (kWh per 1 MW)	Approximately 310 kWh per MW
PE Stamped Structural Calculations & Drawings	Yes
On-site Training and System Commissioning	Yes
Connection	100% bolted connections. No drilling, cutting or welding on-site or in-field fabrication
Scheduled Maintenance	None required
Module Cleaning Compatibility	Robotic, Tractor, Manual
Warranty	10 years structural; 5 years drive and controls components

ATTACHMENT F

ALTA Survey & Property Legal Description

ALTA/NSPS SURVEY
PART OF SE1/4 OF SEC. 17 & N1/2 OF THE NE1/4 OF SEC. 20 T.46N, R.10E LAKE COUNTY, ILLINOIS



STATEMENT OF POSSIBLE ENCROACHMENTS

The following possible encroachment notes are intended to draw the users attention only, the surveyor does not guarantee that the items noted below are in fact encroachments or that all possible encroachments are shown hereon.

- (A) Wire fence meanders east subject property line – ownership and maintenance for these features is not known to the surveyor
- (B) Frame shed – ownership and maintenance for these features is not known to the surveyor.
- (C) Dirt access way – ownership and maintenance for these features is not known to the surveyor.
- (D) Utility pole, overhead wires, and guy wires – ownership and maintenance for these features is not known to the surveyor.
- (E) Miscellaneous temporary storage (pontoon) – ownership and maintenance for these features is not known to the surveyor.

[redacted]

LEGEND

(N#S XX°XX'XX" E/W XX.XX)	TITLE COMMITMENT BEARING
	EASEMENT LINE
	ADJACENT PROPERTY LINE
	FLOOD ZONE LINE
	SECTION LINE
	PARCEL BOUNDARY LINE
	RIGHT OF WAY LINE
	BARBED WIRE FENCE
	RAIL ROAD TRACKS
	TREE LINE
●	DENOTES IRON MONUMENT FOUND
○	DENOTES 3/4 INCH BY 18 INCH IRON REBAR SET WITH PLASTIC PLUG INSCRIBED WITH 3440

0' 100' 200'
SCALE IN FEET

GENERAL NOTES

1. Bearings shown hereon are based on the Illinois State Plain East Zone referenced to the south line of the SE1/4 of Sec. 17, T.46N., R.10W as monumented.
2. Elevations and contours shown hereon were established with GPS and are relative to the NAVD88 vertical datum

VICINITY MAP

Stantec
Cottage Grove Office
209 Commerce Pkwy
Cottage Grove, WI 53527

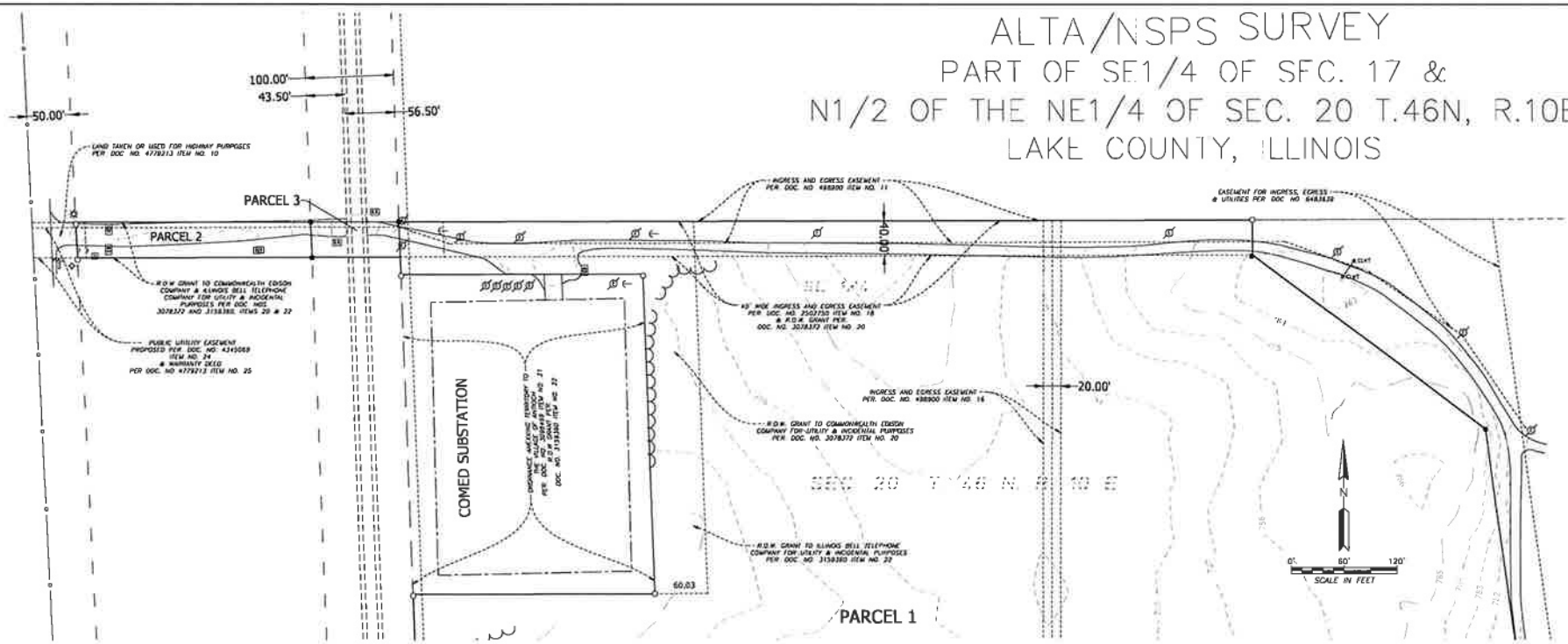
CLIENT
NEXAMP SOLAR, LLC

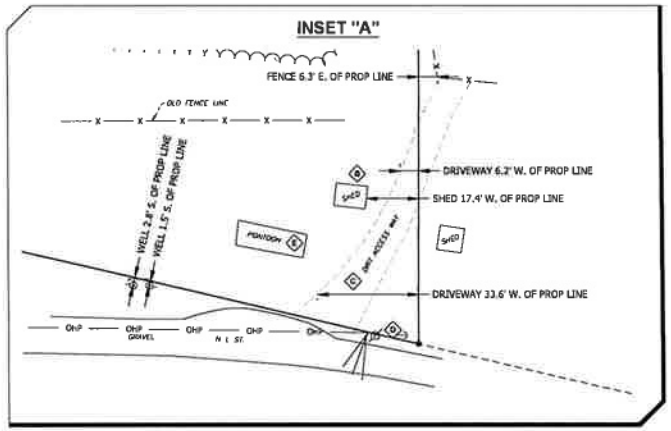
193806152

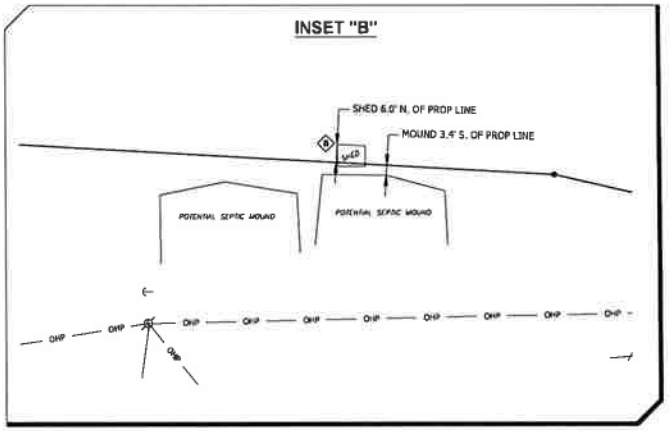
ALTA/NSPS SURVEY

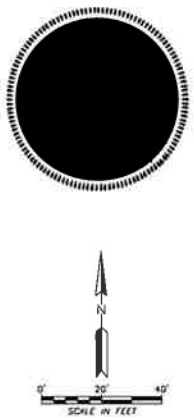
PART OF SE1/4 OF SEC. 17 & N1/2 OF THE NE1/4 OF SEC. 20 T.46N, R.10E

LAKE COUNTY, ILLINOIS









Stantec

College Grove Office
200 Commerce Pkwy
College Grove, TN 37046

CLIENT
NEXAMP SOLAR, LLC

193804132

2 of 3

ALTA/NSPS SURVEY

PART OF SE1/4 OF SEC. 17 & N1/2 OF THE NE1/4 OF SEC. 20 T.46N, R.10E, LAKE COUNTY, ILLINOIS

NOTES CORRESPONDING TO SCHEDULE B - 2

Items corresponding to Schedule B Section 2 as provided in Chicago Title Insurance Company Commitment No IL1808635-148 which has an effective date of March 31, 2022 at 7:00 A.M.

Items 1, 2, 5, 6, 7, 8, 9, 34, 35 are not survey related and are not addressed herein

3. Easements, or claims of easements, not shown by the Public Records. – THE SURVEYOR HAS MADE A GOOD FAITH EFFORT TO DISCLOSE ANY ISSUES DESCRIBED ABOVE THAT WERE OBSERVED DURING THE COURSE OF THE SURVEY.

4. Any encroachments, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land.– THE SURVEYOR HAS MADE A GOOD FAITH EFFORT TO DISCLOSE ANY ISSUES DESCRIBED ABOVE THAT WERE OBSERVED DURING THE COURSE OF THE SURVEY.

10. Rights of the public, the municipality and the State of Illinois in and to that part of the Land taken or used for highway purposes, dated September 19, 2001 and recorded October 12, 2001 as document 4779213. (Affects the West 50 feet of the North 40 feet of the South 13.00 chains feet of the Land).– AFFECTS SUBJECT PROPERTY AS SHOWN HEREON.

11. Easements for ingress and egress extending from the center line of Fox River Road to the westerly line of premises conveyed by deed hereinafter noted, said right of way to be 12 feet wide from the center line of said road to the easterly line of the Minneapolis, St. Paul and Sault Ste. Marie Railway and 20 feet wide from said easterly right of way line of said railway to the easterly end of right of way, the center line of right of way being described as follows: beginning at a point in the center line of Fox River Road, 6 feet South of the North line of the South 13 chains (858 feet) of the Southeast 1/4 of said Section 17; thence North 89° 23' East parallel with said North line of the South 13 chains (858 feet), a distance of 417.28 feet to a point in the easterly right of way line of the Minneapolis, St. Paul and Sault Ste. Marie Railway; thence South 72° 11' East 59.8 feet, thence North 89° 23' East parallel with the said North line of the South 13 chains (858 feet), a distance of 950.54 feet, thence South 70° 37' East 100 feet; thence South 55° 37' East 129 feet; thence South 34° 49' East, 126.85 feet; thence South 61° 09' East, 18.12 feet to a point in the westerly line of the property "conveyed hereby" South 28° 48' East, 25 feet from the northwest corner of said property to be used in common with the owners, occupants and licensees of adjoining premises, as contained in the Quit Claim deed from Rudolph F Struever and Mary O Struever, his wife to Car Struever, dated July 20, 1941 and recorded July 28, 1941 as document 498900.– AFFECTS SUBJECT PROPERTY AS SHOWN HEREON.

12. Grant dated August 25,1910 and recorded September 3, 1910 as document 131078, from L.S. Fairman to the North Shore Electric Company, a corporation of Illinois, demising and leasing to said company, its successors and assigns the full right, permission and authority to erect, maintain and renew poles with the right of access to same, in, upon and along 10 feet of Land described as follows: the East 48.75 Acres East of the highway of the Southeast 1/4 of Section 17 and part of the Northeast 1/4 of and adjoining the right of way of the the Minneapolis, St. Paul and Sault Ste. Marie Railway road.– AFFECTS SUBJECT PROPERTY AS SHOWN HEREON

13. Rights of the public, the municipality and the State of Illinois in and to that part of the Land taken or used for road purposes by instrument dated May 6, 1922 and recorded June 6, 1922 as document 212496 –ILLINOIS ROUTE 83 RIGHT-OF-WAY AS PLOTTED

14. Easement in favor of Illinois Bell Telephone Company, its lessees, successors and assigns, the right to construct, reconstruct, operate and maintain its communication system, consisting of such poles, anchors, guys, wires, cables, conduits, manholes and other fixtures as the grantee may from time to time require for the transmission of sounds and signals by electricity, with the right to permit the attachment of and to carry in conduit wires and cables of any other companies and to clear and keep cleared such trees, roots, bushes and other obstructions from the surface and subsurface as may be required upon, along and under the public roads, streets and highways on or adjoining the property which the undersigned own, or have an interest, in the East 1/2 of the public road known as State Route No. 83, being part of the property described in document 616409, located in part of the South 13 chains of the Southeast 1/4 of Section 17, Township 46 North, Range 10, East of the Third Principal Meridian, in Lake County, Illinois as created by grant recorded on November 14, 1967 as document 1358969 –DOES NOT AFFECT SUBJECT PROPERTY, EASEMENT LIES IN RIGHT-OF-WAY OF ILLINOIS ROUTE 83

15. Easement in favor of Illinois Bell Telephone Company, its lessees, successors and assigns, the right to construct, reconstruct, operate and maintain its communication system, consisting of such poles, anchors, guys, wires, cables, conduits, manholes and other fixtures as the grantee may from time to time require for the transmission of sounds and signals by electricity, with the right to permit the attachment of and to carry in conduit wires and cables of any other companies and to clear and keep cleared such trees, roots, bushes and other obstructions from the surface and subsurface as may be required upon, along and under the public roads, streets and highways on or adjoining the property which the undersigned own, or have an interest, in the East 1/2 of the property described in document 791842, located in part of the South 13 chains of the Southeast 1/4 of Section 17, Township 46 North, Range 10 East of the Third Principal Meridian, in Lake County, Illinois.–WAITING FOR RECORDED DOCUMENT FROM TITLE COMPANY.

16. Easements for ingress and egress over a strip of land 20 feet wide across part of the Southeast 1/4 of Section 17 and part of the Northeast 1/4 of Section 20, herein described, the center line of said strip being described as follows, to-wit: commencing at a point in the North line of the South 13 chains (858 feet) of said Southeast 1/4 of Section 17, 1,160 feet East of the center line of the Fox River Road; thence South 00° 08' East along a line forming an angle of 90° 29' (measured East to South), with the said North line of the South 13 chains (858 feet), a distance of 25 feet for a place of beginning, thence from said place of beginning continuing South 00° 08' East, a distance of 833 feet to a point in the South line of the Southeast 1/4 of said Section 17, 1,484.15 feet West of the Southeast corner thereof; thence continuing South 00° 08' East, a distance of 624 feet to a point in the center line of the traveled roadway to be used in common with the owners, occupants and licensees of adjoining land, as contained in the Quit Claim deed from Rudolph F Struever and Mary O Struever, his wife to Carl Struever, dated July 20, 1941 and recorded July 28, 1941 as document 498900.–AFFECTS SUBJECT PROPERTY AND IS SHOWN HEREON.

17. Grant of Easement in favor of Illinois Bell Telephone Company, a corporation of Illinois, its successors and assigns, to construct, lay, maintain, etc., underground conduits, cables, etc., with right of access thereto for the maintenance thereof, in, upon, under and along the East 1/2 of State Route 83, recorded on December 10, 1971 as document _____ --DOES NOT AFFECT SUBJECT PROPERTY, EASEMENT LIES IN RIGHT-OF-WAY OF ILLINOIS ROUTE 83.

18. Forty foot wide easement for ingress and egress over and across that part of the South 13 chains of the Southeast 1/4 of Section 17, Township 46 North, Range 10, East of the Third Principal Meridian, described as follows: commencing at the intersection of the North line of the South 13 chains (858 feet) aforesaid with the East line of Illinois Route 83; thence North 89° 24' 13" East along the North line of said South 13 chains (858 feet) to a point 970.59 feet East of the East line of the Minneapolis, St. Paul and Sault Ste. Marie Railway; thence South 0° 35' 47" East 40.0 feet; thence West parallel with the North line of said South 13 chains (858 feet) to the East line of said Illinois Route 83; thence North along the East line of said Illinois Route 83 to the point of beginning, as created by grant in the instrument recorded November 7, 1986 as document 2502750.–AFFECTS SUBJECT PROPERTY AS SHOWN HEREON.

19. Annexation Agreement dated March 7, 1991 and recorded August 5, 1991 as document 3048368, a petition for annexation to the Village of Antioch.–DOES NOT AFFECT SUBJECT PROPERTY.

20. Right-Of-Way in favor of Commonwealth Edison Company for utility and incidental purposes as created by grant recorded on October 29, 1991 as document 3078372.–AFFECTS SUBJECT PROPERTY AS SHOWN HEREON.

21. Ordinance No. 91-10-30, an ordinance annexing territory to the Village of Antioch known as the Beelow/Hertel Property, dated October 7, 1991 and recorded December 30, 1991 as document 3098469 –AFFECTS SUBJECT PROPERTY AS SHOWN HEREON

22. Right-Of-Way in favor of Illinois Bell Telephone Company for utility and incidental purposes as created by grant recorded on May 19, 1992 as document 3159360 –AFFECTS SUBJECT PROPERTY AS SHOWN HEREON

23. Land covenant dated November 14, 1994 and recorded November 18, 1994 as document 3616403, between Dale Alden, and the Lake County Health Department.–DOES NOT AFFECT SUBJECT PROPERTY

24. Plat of Survey showing proposed public utility easement and proposed temporary construction easement, dated April 14,1999 and recorded April 28, 1999 as document 4345069 Note:Proposed public utility easement affects the West 30 feet of the North 40 feet of that part of the South 13 chains (858 feet) of the Southeast 1/4 of Section 17. Note: Proposed temporary construction easement affects the East 10 feet of the West 40 feet of the North 40 feet of that part of the South 13 chains (858 feet) of the Southeast 1/4 of Section 17.–AFFECTS SUBJECT PROPERTY AS SHOWN HEREON.

25. Rights of the public, the municipality and the State of Illinois in and to that part of the Land taken or used for highway purposes in document 4779213 recorded October 12, 2001. (Affects the West 50.00 feet of the North 40.00 feet of the South 13.00 chains (858.00 feet) of that part of the Southeast 1/4 feet of the Land) –AFFECTS SUBJECT PROPERTY AS SHOWN HEREON

26. Master Easement and Agreement dated March 28, 2002 and recorded July 18, 2002 as document 4965597, between Wisconsin Central Ltd and Wisconsin Chicago Link Ltd and Commonwealth Edison Company –AFFECTS PARCEL 3

NOTES CORRESPONDING TO SCHEDULE B - 2

27. Ordinance No. 00-10-18, an ordinance regarding the recapture of expenses of the Route 83 property owners due to the extension of the municipal water and sewer system of the Village of Antioch, Illinois dated October 16, 2000 and recorded January 16, 2004 as document 5480600 –AFFECTS SUBJECT PROPERTY AND IS BLANKET IN NATURE.

28. Rights of the public, the municipality and the State of Illinois in and to that part of the Land taken or used for roads and highways, if any –EXISTING ROADWAYS SHOWN HEREON

29. Rights of way for drainage tiles, drainage ditches, feeders and laterals, and any other drainage facilities or easements, if any.–EFFECTS SUBJECT PROPERTY. THE SURVEYOR HAS MADE A GOOD FAITH EFFORT TO MAP ANY VISIBLE DRAINAGE TILES, DITCHES, FEEDERS, AND LATERALS DURING THE COURSE OF THIS SURVEY.

30. Railroad rights-of-way, spurs and switch tracks, if any.–EXISTING RAILROAD RIGHT-OF-WAY, SPURS, AND SWITCH TRACKS SHOWN HEREON.

31. Terms, provisions, and conditions relating to the Easement described in Parcel 3 contained in the instrument creating such Easement. –EFFECTS SUBJECT PARCEL AS SHOWN.

28. Rights of the adjoining owner or owners as to the concurrent use of the Easement described in Parcel 3. –EFFECTS SUBJECT PARCEL AS SHOWN.

29. Recapture Agreement dated January 21, 2003 and recorded July 26, 2004 as document 5607858, between the Village of Antioch, a municipal corporation of the State of Illinois and E.C.B. Antioch, LLC. Assignment of Rights dated October 28, 2005 and recorded July 11, 2006 as document 6024658 –AFFECTS SUBJECT PROPERTY AND IS BLANKET IN NATURE.

TABLE "A" OPTIONAL ITEMS

1. Property corner markers were placed or found as shown
2. Property address: 41125 N IL Route 83, Antioch, IL 60002 & 23150 W Lake Shore Drive, Antioch, IL 60002
3. Flood zone classification: this property located in zone X according to FEMA Flood Insurance Rate Map Number 17097C0029K which has an effective date of September 18, 2013.
4. Gross land area: 1674835.53 sq. ft. (38.45 acres)
5. Elevations and surface contours are shown hereon and are relative to the NAVD88 vertical datum.

6a Zoning Information: There were no zoning reports or letters provided to the surveyor

6b. There were no zoning reports or letters provided to the surveyor. OR The setback lines shown hereon are based on the letter/report referenced in Item 6a OR The letter/report referenced in Item 6a did not adequately define the setback requirements in order to depict them on this survey.

7a. No observed structures on the property.

7b. No observed structures on the property.

7c. No observed structures on the property

8. The surveyor has made their best effort to depict all above ground visible features hereon.

9. There were no visible parking spaces on the subject property.

11a There were no underground utility plans and/or reports provided by the client

11b Visible evidence of utility lines located

13. Names of owners of adjoining lands were obtained from the Lake County GIS

16. There were no observable signs of recent construction or earthmoving on the subject property at the time of survey.

19. All plottable offsite easements provided in the title commitment are shown hereon.

PROPERTY DESCRIPTION

Description provided in Chicago Title Insurance Company Commitment No. IL1808635-148 which has an effective date of March 31, 2022 at 7:00 A.M.

PARCEL 1:
THAT PART OF THE SOUTH 13 CHAINS (858.0 FEET) OF THE SOUTHEAST 1/4 OF THE SECTION 17 AND THAT PART OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 20, TOWNSHIP 46 NORTH, RANGE 10, DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTHEAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE NORTH 89° 24' 13" EAST ALONG THE NORTH LINE OF SAID 13 CHAINS A DISTANCE OF 970.59; THENCE SOUTH 0° 35' 47" EAST A DISTANCE OF 40.0 FEET; THENCE SOUTH 53° 35' 8" EAST A DISTANCE OF 330.67 FEET, THENCE SOUTH 8° 2' 58" EAST A DISTANCE OF 290.48 FEET; THENCE SOUTH 0° 0' 13" WEST A DISTANCE OF 944.45 FEET TO A POINT 200.00 FEET (MEASURED AT RIGHT ANGLES) NORTH OF THE NORTH LINE OF LOT "A" IN LONG BEACH SUBDIVISION, BEING A SUBDIVISION OF SECTIONS 20 AND 21 IN AFORESAID TOWNSHIP 46 NORTH, RANGE 10, ACCORDING TO THE PLAT THEREOF RECORDED JUNE 20, 1929 AS DOCUMENT 338781 IN BOOK "T" OF PLATS, PAGES 82 AND 83; THENCE WESTERLY ALONG LINES WHICH ARE PARALLEL WITH AND 200.00 FEET NORTHERLY OF THE NORTH LINE OF SAID LOT "A" TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY TO THE POINT OF BEGINNING (EXCEPT THAT PART DESCRIBED AS FOLLOWS COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTHEAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE SOUTHERLY ALONG THE EASTERLY LINE OF SAID RAILWAY A DISTANCE OF 60.03 FEET TO THE PLACE OF BEGINNING OF THE PARCEL INTENDED TO BE DESCRIBED THENCE NORTH 89° 24' 13" EAST PARALLEL WITH THE NORTH LINE OF SAID SOUTH 13 CHAINS A DISTANCE OF 275.0 FEET; THENCE SOUTHERLY PARALLEL WITH THE EASTERLY LINE OF AFORESAID RAILWAY A DISTANCE OF 363.90 FEET; THENCE SOUTH 89° 24' 13" WEST PARALLEL WITH THE NORTH LINE OF SAID SOUTH 13 CHAINS, A DISTANCE OF 275.0 FEET TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY A DISTANCE OF 363.90 FEET TO THE PLACE OF BEGINNING; AND EXCEPT THAT PART DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE EAST LINE OF THE RAILROAD AND THE NORTH LINE OF THE SOUTH 13 CHAINS OF THE SOUTHEAST 1/4 OF SECTION 17, TOWNSHIP 46 NORTH, RANGE 10, THENCE SOUTH ALONG THE EAST LINE OF RAILROAD 60.03 FEET, THENCE EAST 275.0 FEET; THENCE NORTH TO THE NORTH LINE OF THE SOUTH 13 CHAINS; THENCE WEST TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS

PARCEL 2:
THE NORTH 40.0 FEET (EXCEPTING THE WEST 50.00 FEET OF THE NORTH 40.00 FEET) OF THE SOUTH 13 CHAINS (858.0 FEET) OF THE SOUTHEAST 1/4 OF SECTION 17, TOWNSHIP 46 NORTH, RANGE 10 EAST OF THE THIRD PRINCIPAL MERIDIAN, LYING EAST OF THE CENTERLINE OF ILLINOIS ROUTE 83 AND LYING WEST OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY, ALSO ALL THAT PART OF ILLINOIS ROUTE 83 LYING WEST OF SAID DESCRIBED PARCELS, IN LAKE COUNTY, ILLINOIS.

PARCEL 3:
EASEMENT FOR INGRESS AND EGRESS FOR THE BENEFIT OF PARCEL 1, AS ESTABLISHED BY PRESCRIPTION, UPON AND OVER THAT PART OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY NOW COVERED BY A GRAVEL DRIVEWAY, AS SHOWN ON AND LOCATED BY SURVEY ATTACHED AS EXHIBIT D TO AFFIDAVIT DATED JANUARY 19, 1989 AND RECODED FEBRUARY 14, 1989 AS DOCUMENT 2765676, LAKE COUNTY, ILLINOIS.

PARCEL 4:
THAT PART OF THE SOUTH 13 CHAINS (858.0 FEET) OF THE SOUTHEAST 1/4 OF THE SECTION 17 AND THAT PART OF THE NORTH 1/2 OF THE NORTHEAST 1/4 OF SECTION 20, TOWNSHIP 46 NORTH, RANGE 10, DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE NORTH LINE OF THE SOUTH 13 CHAINS OF SAID SOUTHEAST 1/4 OF SECTION 17 WITH THE EASTERLY LINE OF THE MINNEAPOLIS, ST. PAUL AND SAULT STE. MARIE RAILWAY; THENCE NORTH 89° 24' 13" EAST ALONG THE NORTH LINE OF SAID 13 CHAINS A DISTANCE OF 970.59. THENCE SOUTH 0° 35' 47" EAST A DISTANCE OF 40.0 FEET, THENCE SOUTH 53° 35' 8" EAST A DISTANCE OF 330.87 FEET, THENCE SOUTH 8° 2' 58" EAST A DISTANCE OF 290.48 FEET, THENCE SOUTH 0° 0' 13" WEST A DISTANCE OF 944.45 FEET TO A POINT 200.00 FEET (MEASURED AT RIGHT ANGLES) NORTH OF THE NORTH LINE OF LOT "A" IN LONG BEACH SUBDIVISION, BEING A SUBDIVISION OF SECTIONS 20 AND 21 IN AFORESAID TOWNSHIP 46 NORTH, RANGE 10, ACCORDING TO THE PLAT THEREOF RECORDED JUNE 20, 1929 AS DOCUMENT 338781 IN BOOK "T" OF PLATS, PAGES 82 AND 83, THENCE WESTERLY ALONG LINES WHICH ARE PARALLEL WITH AND 200.00 FEET NORTHERLY OF THE NORTH LINE OF SAID LOT "A" TO THE EASTERLY LINE OF SAID RAILWAY; THENCE NORTHERLY ALONG SAID RAILWAY TO THE POINT OF BEGINNING, IN LAKE COUNTY, ILLINOIS

[redacted]

CERTIFICATION

To NEXAMP SOLAR, LLC. and 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, 5, 6, 7, 8, 9, 11a, 11b, 13, 16, and 19 of Table A thereof.

I further certify that this survey, plan or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Illinois

Date of fieldwork: 3-25-2023

DRAFT COPY

Corey Wortinel, IL P.L.S. #3440 — X/XX/2023 Date

This professional service conforms to the current Illinois minimum standards for a boundary survey. My License expires: 11/30/2024

Stantec

Cottage Grove Office
209 Commerce Pkwy
Cottage Grove, WI 53527

CLIENT
NEXAMP SOLAR, LLC

193806152

ATTACHMENT G

Site Plan Set

Please note, the final CUP Site Plan Set are under separate cover via mail.

ATTACHMENT H

NRI Application (Including Wetland Delineation)

Stantec

Wetland Delineation Report

Loon Lake Solar Parcel

Antioch, Lake County, Illinois

Stantec Project #:193806152

Lead Delineators: Brian Lennie and Erica Gerloski

June 27, 2023

Prepared for:

Matt Walsh
Nexamp, Inc.
101 N. Wacker Dr. Suite 200
Chicago, IL, 60606

Prepared by:

Stantec Consulting Services Inc.
12080 Corporate Parkway, Suite 200
Mequon, WI 53092
Phone: (262) 241-4466

Table of Contents

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) completed a wetland delineation of the Loon Lake Solar Parcel (the "Project Area") on behalf of Nexamp, Inc. The wetland delineation was led by Brian Lennie (CWS #C-010) and Erica Gerloski of Stantec, on April 26, 2023 (see Appendix A for Delineator Qualifications).

The Project Area is approximately 39.08 acres and located in Section 17 and 20, Township 46 North, Range 10 East, Village of Antioch, Lake County, Illinois. Specifically, the Project Area is located east of IL-83 South and north of North L Street (Appendix B, Figure 1). The purpose and objective of the wetland delineation was to identify the extent and spatial arrangement of wetlands within the Project Area.

Wetland and waterways may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers (USACE), state regulation under the jurisdiction of the Illinois Department of Natural Resources (IDNR), and local regulation under jurisdiction of the county, town, city, or village. Stantec recommends this report be submitted to local authorities, the IDNR, and USACE for final jurisdictional review and concurrence.

2.0 METHODS

2.1 WETLANDS

Wetland delineations were based on the criteria and methods outlined in the *Corps of Engineers Wetlands Delineation Manual,* Technical Report Y-87-1 (1987) and subsequent guidance documents, and applicable Regional Supplements to the *Corps of Engineers Wetland Delineation Manual.*

The wetland delineation involved the use of available resources to assist in the assessment such as U.S. Geological Survey (USGS) Topographic Maps, U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Soil Survey, U.S. Fish and Wildlife Service (USFWS), National Wetland Inventory (NWI) mapping, and aerial photography.

On-site wetland delineation was made using the three criteria (vegetation, soil, and hydrology) and technical approach defined in the USACE 1987 Manual and applicable Regional Supplement. According to procedures described in the 1987 Manual and applicable Regional Supplement, areas that under normal circumstances reflect a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology (e.g., inundated or saturated soils) are considered wetlands.

As recent weather patterns influence the visibility and presence of some wetland hydrology indicators, the antecedent precipitation in the three months leading up to the field investigation was reviewed. The current year's precipitation data were compared to the most recent long-term (30-year) precipitation averages and standard deviation to determine if precipitation was normal, wet, or dry for the area using the Antecedent Precipitation Tool developed by the USACE.

A review of U.S. Department of Agriculture Farm Service Agency (FSA) National Agriculture Imagery Program (NAIP) aerial imagery and other available aerial imagery was completed for the Project Area to assist in the wetland delineation because farmed areas with mapped poorly drained or somewhat poorly drained soils are present within the Project Area. The aerial imagery was reviewed for the appearance of wetland signatures within the farmed areas. A wetland signature is field evidence, recorded by aerial imagery, of ponding, flooding, or impacts of saturation for sufficient duration, which meets wetland hydrology and possibly wetland vegetation criteria. Wetland signatures may vary based on the type and seasonal date of the aerial imagery. Signatures visible on FSA annual aerial slides in cropland for Illinois have been categorized as follows (USDA, NRCS 1998):

1. NWI – area is labeled as a wetland on the National Wetland Inventory
2. Hydrophytic vegetation (seen as a different color of green)
3. Surface water (usually black or white)
4. Drowned-out crops (bare soil or mud flats)
5. Differences in vegetation (within a field) due to different planting dates
6. Isolated areas that are not farmed with rest of the field (includes areas not planted due to wetness at times of planting)
7. Inclusion of wet areas in set-aside program if other signs of wetness are evident
8. Patches of greener vegetation (crop) during years of below normal precipitation
9. Crop stress (yellow) or sparse canopy coverage of crop (light green), that has been in stress due to wetness.

As part of the imagery review, the climatic condition of each aerial image was determined by comparing the antecedent precipitation in the three months leading up to the capture date of the image to the most recent long-term (30-year) precipitation averages using a WETS analysis for each imagery year. This comparison was made to determine if the climatic condition for a given year was normal, wet, or dry.

Additionally, the presence of mapped poorly and somewhat poorly drained soils, NWI mapping, and topography within the Project Area was reviewed in conjunction with an analysis of available aerial imagery for wetland signatures in these areas. Areas within agricultural fields are typically identified as wetland if they contain hydric soils and 50% or more of the aerial images taken in the five (or more) most recent normal precipitation years show any of the wetland signatures listed above.

The wetland boundary and sampling points were identified and surveyed with a Global Positioning System (GPS) capable of sub-meter accuracy and mapped using Geographical Information System (GIS) software and flagged with hi-vis pink wetland flags.

2.2 FLORISTIC QUALITY ASSESSMENT

A Floristic Quality Assessment (FQA) was completed by completing meander surveys for species present within the wetland communities identified within the Project Area and applying an assessment technique that was developed by Swink and Wilhelm (1994) for rapid evaluation of plant communities using the Universal FQA system (https://universalfqa.org/). This method is based on calculating a mean Coefficient of Conservatism value (C) and a Floristic Quality Index value (FQI) for each wetland plant community. A state or region assigns each native species a C value which ranges from 0 to 10 and represents an estimated probability that a plant is likely to occur in a landscape relatively unaltered from what is believed to be a pre-settlement condition. A C-value of 0 is applied to a species that demonstrates little fidelity to any remnant natural community, whereas a C-value of 10 is applied to plants that are almost always restricted to pre-settlement remnants. Values lower than 4 generally represent weedy species and values closer to 10 represent more "conservative", rare, or disturbance intolerant species (Wilhelm and Rericha, 2017).

FQI values were calculated using the following formula:

$FQI = \text{Mean } C\ (\sqrt{N})$

C= Coefficient of Conservatism
N=species richness (Identifiable Native and Non-native)

The FQI has traditionally been calculated using C values and species richness of only native species. However, more recently, scientists have been including the non-native species in the calculations, giving all non-native species a C value of "0". This methodology better reflects the actual integrity of a site, particularly in highly disturbed conditions dominated by non-native taxa. Disregarding the non-native species can often give sites falsely elevated mean C and FQI values that do not reflect the presence or abundance of these less desirable species, which can influence the overall floristic quality of an area.

3.0 RESULTS

3.1 SITE DESCRIPTION

The Project Area is comprised of agricultural cropland, wet meadow, shallow marsh, hardwood swamp, farmed wetlands, roadside ditch, and upland mesic woods. The Project Area is relatively flat and generally slopes west with topographic highs of approximately 791 feet above mean sea level (msl) along the northern boundary and south-central portion of the Project Area, to 780 feet msl along the western boundary of the Project Area. The Project Area is bordered by the Sequoit Creek Forest Preserve to the north, the Northern Illinois Conservation Club to the northeast, residential homes to the east and south, existing substation to the northwest, and railway to the west.

Soils present within the Project Area and their hydric status are summarized in Table 1. Wetlands identified during the field investigation are located primarily within areas mapped as hydric or partially hydric soils (Appendix B, Figure 2). Soils within the agricultural fields are disturbed due to typical farming practices.

Table 1. Summary of Soils Identified within the Project Area

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
146A: Elliott silt loam, 0 to 2 percent slopes	Elliott	85-100	Ground moraines, till plains	No
	Ashkum-Drained	0-9	Till plains, ground moraines	Yes
	Urban land	0-3	Ground moraines	No
	Orthents, clayey	0-3	Till plains, ground moraines	No
153A: Pella silty clay loam, 0 to 2 percent slopes	Pella-Drained	90-100	Lake plains, till plains, outwash plains	Yes
	Harpster-Drained	0-9	Depressions on outwash plains, depressions on till plains	Yes
	Urban land	0-2	—	No
232A: Ashkum silty clay loam, 0 to 2 percent slopes	Ashkum-Drained	85-100	End moraines, ground moraines	Yes
	Peotone-Drained	0-9	Depressions on ground moraines	Yes
	Orthents, clayey	0-3	Ground moraines, lake plains	No
	Urban land	0-3	Ground moraines	No
298A: Beecher silt loam, 0 to 2 percent slopes	Beecher	85-100	End moraines, ground moraines	No
	Ashkum-Drained	0-9	Ground moraines, end moraines	Yes
	Urban land	0-3	Ground moraines	No
	Orthents, clayey	0-3	Ground moraines	No
298B: Beecher silt loam, 2 to 4 percent slopes	Beecher	85-100	End moraines, ground moraines	No
	Ashkum-Drained	0-9	Ground moraines, end moraines	Yes
	Urban land	0-3	Ground moraines	No
	Orthents, clayey	0-3	Ground moraines	No

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
442A: Mundelein silt loam, 0 to 2 percent slopes	Mundelein	88-100	Lake plains, stream terraces, outwash plains	No
	Drummer	0-9	Ground moraines, outwash plains	Yes
	Pella	0-9	Lake plains, ground moraines, outwash plains	Yes
	Orthents, loamy	0-5	Ground moraines, lake plains	
	Urban land	0-5	—	
531B: Markham silt loam, 2 to 4 percent slopes	Markham	85-100	End moraines, ground moraines	No
	Ashkum-Drained	0-9	End moraines, ground moraines	Yes
	Urban land	0-3	Ground moraines	No
	Orthents, clayey	0-3	Ground moraines	No
697A: Wauconda silt loam, 0 to 2 percent slopes	Wauconda	88-100	Lake plains, stream terraces, outwash plains	No
	Pella	0-5	Lake plains, ground moraines, outwash plains	Yes
	Orthents, loamy	0-5	Ground moraines, lake plains	No
	Drummer	0-5	Ground moraines, outwash plains	Yes
	Urban land	0-5	—	No
706B: Boyer sandy loam, 2 to 4 percent slopes	Boyer	90	Lake terraces, outwash plains	No
	Pella		Lake plains, outwash plains, ground moraines	Yes
	Dunham		Stream terraces, outwash plains	Yes
706C: Boyer sandy loam, 4 to 6 percent slopes	Boyer	90	Outwash plains, lake terraces	No
	Pella		Lake plains, outwash plains, ground moraines	Yes
	Dunham		Stream terraces, outwash plains	Yes
840B: Zurich and Ozaukee silt loams, 2 to 4 percent slopes	Zurich	46	Lake plains, outwash plains	No
	Ozaukee	45	Ground moraines, lake plains	No
	Pella		Lake plains, outwash plains, ground moraines	Yes
	Ashkum		End moraines, ground moraines	Yes
989A: Mundelein and Elliott silt loams, 0 to 2 percent slopes	Mundelein	46	Lake plains, outwash plains	No
	Elliott	44	Ground moraines, lake plains	No
	Ashkum		End moraines, ground moraines	Yes
	Pella		Lake plains, outwash plains, ground moraines	Yes
989B: Mundelein and Elliott silt loams, 2 to 4 percent slopes	Mundelein	46	Lake plains, outwash plains	No

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
	Elliott	44	Lake plains, ground moraines	No
	Ashkum		End moraines, ground moraines	Yes
	Pella		Lake plains, outwash plains, ground moraines	Yes

The NWI map identifies one wetland within the western portion of the Project Area, and one wetland outside of the Project Area northeast of the boundary, as well as one large waterbody (Loon Lake) south of the Project Area (Appendix B, Figure 3). The field delineated wetland W4 is located within the same vicinity as the wetland identified on the NWI map. The remaining field delineated wetlands (W1, W2, W3, W5, W6, W7, and W8) are not identified on the NWI map.

3.2 CLIMATIC CONDITIONS

Average precipitation for the investigation area was obtained using the Antecedent Precipitation Tool (Gutenson and Deters, USACE). A total of 7.07 inches of precipitation occurred in the three-month period prior to the April 26, 2023, field investigation. When compared to the long-term precipitation data for the three months prior to the field investigation, precipitation conditions are considered normal (Appendix C). Additionally, the Web-based Water-budget Interactive Modeling Program (WebWIMP) determined that April is within the wet season for the Project Area.

3.3 WETLANDS

Eight wetlands were identified and delineated within the Project Area. The wetland boundary and sample point locations are shown on Figure 4 (Appendix B). Wetland determination data forms were completed for 15 sample points along transects through the wetlands and adjacent uplands and are included in Appendix D. Photographs of the wetlands and adjacent lands are included in Appendix E. FQA results for each wetland are provided in Appendix F. The wetlands are summarized in Table 2 below and described in detail in the following sections.

Table 2. Summary of Wetlands Identified within the Project Area

Wetland ID	Observed Wetland Type*	Mapped NWI Wetland Type**	FQA	Adjacent Surface Waters	Acreage (on-site)
Wetland 1 (W1)	PFO, Hardwood Swamp	Not mapped	Total FQI: 1.6 Total Mean C: 0.6	No surface water connections observed.	0.09
Wetland 2 (W2)	PEM, Farmed Wetland	Not mapped	Total FQI: 0.7 Total Mean C: 0.5	No surface water connections observed.	0.05
Wetland 3 (W3)	PEM, Farmed Wetland	Not mapped	Total FQI: 1.0 Total Mean C: 1.0	No surface water connections observed.	0.06
Wetland 4 (W4)	PEM, Wet Meadow	PEM1C	Total FQI: 7.1 Total Mean C: 2.5	No surface water connections observed.	2.12

Wetland ID	Observed Wetland Type*	Mapped NWI Wetland Type**	FQA	Adjacent Surface Waters	Acreage (on-site)
Wetland 5 (W5)	PEM, Shallow Marsh	Not mapped	Total FQI: 3.5 Total Mean C: 1.8	No surface water connections observed.	0.50
Wetland 6 (W6)	PEM, Farmed Wetland	Not mapped	Total FQI: 0.4 Total Mean C: 0.2	No surface water connections observed.	0.07
Wetland 7 (W7)	PEM, Farmed Wetland	Not mapped	Total FQI: 0.0 Total Mean C: 0.0	No surface water connections observed.	0.06
Wetland 8 (W8)	PEM, Farmed Wetland	Not mapped	Total FQI: 0.7 Total Mean C: 0.5	No surface water connections observed.	0.11
				TOTAL	**3.08**

*Wetland type based on Cowardin et al., 1979
**Mapped NWI wetland may or may not correspond to field observed wetland type

3.3.1 Wetland 1

Wetland 1 (W1) is a ditched hardwood swamp wetland community in the northern portion of the Project Area. The wetland is present on the north and south side of the gravel driveway that continues east to the Northern Illinois Conservation Club and a private residence. The wetland appears to continue off-site to the north into the Sequoit Creek Forest Preserve.

Vegetation

Dominant plant species identified at sample points completed within W1 consist of American elm (*Ulmus America,* FACW), Eastern cottonwood (*Populus deltoides,* FAC), European buckthorn (*Rhamnus cathartica,* FAC), and reed canary grass (*Phalaris arundinacea*, FACW). Other common species identified in the wetland are listed on the data forms included in Appendix B. The dominant species within the wetland are comprised mostly of hydrophytic vegetation (OBL, FACW, and/or FAC) and meet the hydrophytic vegetation criterion. W-1 had an adjusted FQI of 8.5

Hydrology

Due to the ditch characteristics of this wetland, hydrology appears to be influenced by precipitation events. High Water Table within the upper 12 inches (A2), Sparsely Vegetated Concave Surface (B8), and Water-Stained Leaves (B9) were observed as primary indicators of wetland hydrology. Secondary indicators of wetland hydrology observed included Geomorphic Position (D2) and a positive FAC-Neutral Test (D5). Therefore, the wetland hydrology criterion was met.

Soils

Soils within the wetland are mapped by the NRCS as Mundelein and Elliot silt loams (989A) (Figure 2, Appendix A). The soils observed at the sample points were generally consistent with the Mundelein series characteristics. Field indicators of hydric soil identified at sample points W1-1W consisted of NRCS field Indicators A12-Thick Dark Surface and F6-Redox Dark surface. Therefore, the hydric soil criterion was satisfied.

3.3.2 Wetlands W2, W3, W6, W7, and W8

Wetlands W2, W3, W6, W7, and W8 are isolated farmed wetlands that appear to be farmed regularly. Debris shows that these fields were in corn production the previous year.

Vegetation

Dominant plant species identified at sample points completed within the five wetlands consisted of bald spikerush (*Eleocharis erythropoda,* OBL), common knotgrass (*Polygonum aviculare,* FAC), reed canary grass, kidney-leaf buttercup (*Ranunculus abortivus,* FACW), and common whitlow grass (*Draba verna,* UPL). Other common species identified in the wetland are listed on the data forms included in Appendix B. Wetlands W2, W3, W6, W7, and W8 were found to have problematic hydrophytic vegetation as it is likely to be suppressed with regular herbicide application and plowing. The dominant species within the remaining wetlands are comprised mostly of hydrophytic vegetation (OBL, FACW, and/or FAC) and meet the hydrophytic vegetation criterion. Wetlands W2, W3, W6, W7, and W8 had an adjusted FQI of 7.1, 10, 4.5, 0, and 7.1 respectively.

Hydrology

The wetlands appear to be seasonally inundated following spring snowmelt and rainfall, and the hydrology appears to remain throughout the growing season as crops appear to be stressed or the wetland is not planted. Saturation within the upper 12 inches (A3) and Water-Stained Leaves (B9) were observed as primary indicators of wetland hydrology. Secondary indicators of wetland hydrology observed included Crayfish Burrows (C8), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2), and a positive FAC-Neutral Test (D5). Therefore, the wetland hydrology criterion was met at all five wetlands.

Soils

Soils within the wetland are mapped by the NRCS as Beecher silt loam (298A), and Mundelein and Elliot silt loams (989B) (Figure 2, Appendix A). The soils observed at the sample points were generally consistent with the Beecher series, and Mundelein and Elliot series characteristics. Field indicators of hydric soil identified at sample points within the wetlands consisted of NRCS field Indicators A11-Depleted Below Dark Surface, F3-Depleted Matrix, F6-Redox Dark surface, and S5-Sandy Redox. Therefore, the hydric soil criterion was satisfied.

3.3.3 Wetland W4

Wetland W4 is a wet meadow with scattered wet mesic hardwoods and appears to be seasonally inundated. The wetland is adjacent to agricultural fields, upland woodland, residential development, and railroad corridor.

Vegetation

Dominant plant species identified at sample points completed within wetland W4 consisted of silver maple (*Acer saccharinum,* FACW) and black willow (*Salix nigra,* OBL) in the tree stratum; European buckthorn in the sapling/shrub stratum; and cutleaf teasel (*Dipsacus laciniatus,* UPL), and lake sedge (*Carex lacustris*, OBL) in the herbaceous stratum. Other common species identified in the wetland are listed on the data forms included in Appendix B. The dominant species within the remaining wetlands are comprised mostly

of hydrophytic vegetation (OBL, FACW, and/or FAC) and meet the hydrophytic vegetation criterion. Wetland W4 had an adjusted FQI of 7.1.

Hydrology

The wetlands appear to be seasonally inundated following spring snowmelt and rainfall, and the hydrology appears to remain consistent throughout the remainder of the growing season. Water-Stained Leaves (B9) was observed as a primary indicator of wetland hydrology. Secondary indicators of wetland hydrology observed included Crayfish Burrows (C8), Geomorphic Position (D2), and a positive FAC-Neutral Test (D5). Therefore, the wetland hydrology criterion was met at Wetland W4.

Soils

Soils within the wetland are mapped by the NRCS as Pella silty clay loam (153A) (Figure 2, Appendix A). The soils observed at the sample points were generally consistent with the Pella series characteristics. Field indicators of hydric soil identified at sample point W4-1W consisted of NRCS field Indicators A11-Depleted Below Dark Surface and F3-Depleted Matrix. Therefore, the hydric soil criterion was satisfied.

3.3.4 Wetland W5

Wetland W5 is an emergent, shallow marsh community with scattered wet-mesic lowland hardwoods. The perimeter of the wetland appears to have been disturbed due to typical farming practices.

Vegetation

Dominant plant species identified at sample points completed within Wetland W5 consisted of black willow and Eastern cottonwood in the tree stratum; reed canary grass, rough cocklebur (*Xanthium strumarium,* FAC), and narrowleaf cattail (*Typha angustifolia,* OBL) in the herb stratum. Other common species identified in the wetland are listed on the data forms included in Appendix B. The dominant species within the remaining wetlands are comprised mostly of hydrophytic vegetation (OBL, FACW, and/or FAC) and meet the hydrophytic vegetation criterion. W5 had an adjusted FQI of 3.5.

Hydrology

The wetlands appear to be seasonally inundated following spring snowmelt and rainfall, and the hydrology appears to remain throughout the growing season. Saturation within the upper 12 inches (A3) and Water-Stained Leaves (B9) were observed as primary indicators of wetland hydrology. Secondary indicators of wetland hydrology observed included Crayfish Burrows (C8), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2), and a positive FAC-Neutral Test (D5). Therefore, the wetland hydrology criterion was met at Wetland W5.

Soils

Soils within the wetland are mapped by the NRCS as Mundelein and Elliot silt loams (989B) (Figure 2, Appendix A). The soils observed at the sample points were generally consistent with the Mundelein and Elliot series characteristics. Field indicators of hydric soil identified at sample point W5-1W consisted of NRCS field Indicator A-12 Thick Dark Surface. Therefore, the hydric soil criterion was satisfied.

3.3.5 Wetland Boundary

The wetland boundary was determined based on distinct differences in vegetation, hydrology, soils, and topography consisting of the following: 1) Transition from a hardwood swamp wetland community dominated by reed canary grass and tussock sedge to a mesic woodland upland community dominated by

American elm and reed canary grass, to European buckthorn and cutleaf teasel; transition from an emergent shallow marsh wetland community dominated by black willow, narrowleaf cattail, and rough cocklebur, to annual bluegrass (*Poa annua,* FACU) and field pennycress (*Thlaspi arvense*, FACU); transition from wet meadow dominated by silver maple and lake sedge to Osage orange (*Maclura pomifera,* FACU) and ground ivy (*Glechoma hederacea,* FACU); transition from farmed wetland dominated by bald spikerush and kidney-leaf buttercup, to annual bluegrass and common whitlow grass; 2) Transition from an area exhibiting wetland hydrology indicators within the wetland to a lack of wetland hydrology indicators within the adjacent upland; 3) Transition from soils exhibiting hydric soil indicators to soils lacking indicators of hydric soil conditions; and 4) location of crop stress signatures from the off-site aerial imagery analysis in normal precipitation years consistent with observations made in the field. The transition from wetland to upland characteristics generally correlated with a well-defined topographic break.

3.4 OFF-SITE AERIAL IMAGERY REVIEW

A review of aerial imagery covering the six most recent "normal" precipitation years and two wetter than normal years were completed for the active agricultural field to determine if there were any areas of potential wetland signatures (Appendix G). Seven areas (A, B, C, D, E, F, and G) were interpreted in the off-site aerial imagery review as showing wetness signatures in normal years and are located in NRCS mapped hydric soils. Samples were taken in the locations in which greater than or equal to 33-percent of the images showed wetness signatures in normal years. Areas A, C, D, E, and F were determined to be farmed wetlands and Area B was a shallow marsh with standing water and a narrow, farmed wetland fringe. Sample point W2-1W corresponded with Area F, W3-1W corresponded with Area E, W5-1W corresponded with Area B, W6-1W corresponded with Area A, W7-1W corresponded with Area D, and W8-1W corresponded with Area C. Consistent wetland signatures were not seen within other areas of the agricultural field, including Area G.

3.5 UPLANDS

Upland within the Project Area consisted of agricultural field and mesic woodland. In general, uplands were higher in elevation than adjacent wetlands and there was a clear change in topography. Dominant plant species identified within the agricultural uplands consisted largely of annual bluegrass, chickweed (*Stellaria media,* FACU), common whitlow grass, and field pennycress. Dominant plant species in the mesic woodland communities consisted of Eastern cottonwood, Osage orange, and white mulberry (*Morus alba,* FAC) in the tree stratum; European buckthorn in the sapling/shrub stratum; and catchweed bedstraw (*Galium aparine,* FACU), common dandelion (*Taraxacum officinale,* FACU), ground ivy, cutleaf teasel, and reed canary grass in the herbaceous stratum. Other common species identified in the uplands are listed on the data forms included in Appendix B. Uplands were observed within mapped NRCS Hydric Soil Units but did not meet the criteria for hydric soils. The upland sample points lacked hydrophytic vegetation, wetland hydrology, and did not meet the hydric soil criterion.

3.6 WATERWAYS

No waterways were observed within the Project Area.

3.7 FLORISTIC QUALITY ASSESSMENT

A Floristic Quality Assessment was completed for each of the eight wetlands delineated within the Project Area. Detailed FQA results and species lists are provided in Appendix F for the eight wetlands.

3.8 OTHER ENVIRONMENTAL CONSIDERATIONS

This report is limited to the identification of state and/or federally regulated wetlands and waterways within the Project Area. However, there may be other regulated features within the Project Area, including, but not limited to, historical or archeological features, endangered or threatened species, navigable waters, shoreland zones, and/or floodplains, etc. Federal, state, and local units of government and regional planning organizations may have regulatory authority to control or restrict land uses within or in close proximity to these features.

4.0 CONCLUSION

Stantec completed a wetland delineation of Loon Lake Solar (the "Project Area") on behalf of Nexamp, Inc. The approximately 39.08-acre Project Area is located in Section 17 and 20, Township 46 North, Range 10 East, Antioch Township, Lake County, Illinois. The purpose and objective of the wetland delineation was to identify wetlands and potentially jurisdictional waterways within the Project Area.

Eight wetlands were identified and delineated within the Project Area in accordance with state and federal guidelines and were subsequently flagged, surveyed with GPS, and mapped using GIS software. There were a combined total of approximately 3.08 acres of wetlands within the Project Area. Wetlands were mostly composed of emergent and forested wetland. Adjacent uplands were composed of agricultural lands, mesic woodlands, Forest Preserve property, electric substation, railroad corridor, and residential development.

The wetlands and waterways identified for this report may be subject to federal regulation under the jurisdiction of USACE, state regulation under the jurisdiction of the IDNR, and local regulation under jurisdiction of the county, town, city, or village. Stantec recommends this report be submitted to local authorities, the IDNR, and USACE for final jurisdictional review and concurrence.

Prior to beginning work at this site or disturbing or altering wetlands, waterways, or adjacent lands in any way, Stantec recommends that the owner obtain the necessary permits or other agency regulatory review and concurrence with regard to the proposed work to comply with applicable regulations.

The information provided by Stantec regarding wetland boundaries is a scientific-based analysis of the wetland and upland conditions present within the Project Area at the time of the fieldwork. The delineation was completed by experienced and qualified professionals using standard practices and sound professional judgment. The ultimate decision on wetland boundaries rests with the USACE and, in some cases, the IDNR or a local unit of government. As a result, there may be adjustments to boundaries based upon review by a regulatory agency. An agency determination can vary from time to time depending on various factors including, but not limited to recent precipitation patterns and the season of the year. In addition, the physical characteristics of the Project Area can change over time, depending on the weather, vegetation patterns, drainage activities on adjacent parcels, or other events. Any of these factors can change the nature and extent of wetlands within the Project Area.

5.0 REFERENCES

Cowardin, L.M., V. Carter, F. Golet, and E. LaRoe. 1979. *Classification of wetlands and deepwater habitats of the United States.* U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. http://www.fws.gov/wetlands/Documents/classwet/index.html (Version 04DEC1998).

Environmental Laboratory. 1987. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Midwestern Regional Climate Center. 2021. *cli-MATE* [climate data access tool]. Retrieved from http://mrcc.isws.illinois.edu/CLIMATE/.

National Oceanic and Atmospheric Administration. 2021. Regional Climate Centers Applied Climate Information System. *WETS table*. Retrieved from http://agacis.rcc-acis.org.

Prusila, M. E, J. E. Crane, and G. H. Westman. 2020. *Wetland Restoration and Preservation Plan for Lake County Illinois. Volume 1: Technical Report & User Guide.* Lake County Stormwater Management Commission. 102 pp. Retrieved from www.lakecountyil.gov.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database. Available online at http://websoilsurvey.nrcs.usda.gov/ or http://datagateway.nrcs.usda.gov/. Accessed [April 13, 2023].

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed [2023].

Swink, F. and G. Wilhelm. 1994. *Plants of the Chicago Region.* 4th ed. Indiana Academy of Science, Indianapolis. 921 pp.

USACE. 2005. *Guidance on Ordinary High Water Mark Identification.* (Regulatory Guidance Letter, No. 05-05). Retrieved from http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/GuidanceLetters.aspx.

USACE. 2007. *Jurisdictional Determination Form Instructional Guidebook.* Retrieved from http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf.

USACE. 2018. National Wetland Plant List, version 3.4. USACE Engineer Research and Development Center, Cold Water Regions Research and Engineering Laboratory, Hanover, N.H. Retrieved from http://wetland-plants.usace.army.mil/.

USACE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Department of Agriculture, Farm Service Agency (USDA, FSA). (I2011, 2012, 2014, 2015, 2017, 2019, 2021, 2022) [Lake County, IL aerial photographs]. National Agriculture Imagery Program (NAIP). Salt Lake City, UT: Aerial Photography Field Office.

U.S. Department of Agriculture, Natural Resource Conservation Service (USDA, NRCS). 1998. *Illinois Wetland Mapping Conventions*. Illinois Bulletin No. IL 190-8-4.

USDA, NRCS. 2018. *Field Indicators of Hydric Soils in the United States*, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils.

U.S. Fish and Wildlife Service (USFWS). 2012. [Wetlands Spatial Data Layer]. *Wetland Geodatabase, National Wetlands Inventory*.

United States Geological Survey (USGS). *Illinois 7.5 Minute Series (Topographic) Maps*. 1:24,000. Reston, VA: United States Department of the Interior, USGS.

Universal Floristic Quality Assessment System Tool. Available online at https://universalfqa.org/, Accessed [2023].

Wilhelm, G., and L. Rericha. 2017. Flora of the Chicago region: A floristic and ecological synthesis. Indianapolis: Indiana Academy of Science.

Appendix A DELINEATOR QUALIFICATIONS

Brian Lennie C.W.S.

Associate/Senior Scientist
29 years of experience · Mequon, Wisconsin

Mr. Lennie joined Stantec in 1994 and currently serves as a Senior Scientist and Project Manager. Mr. Lennie's responsibilities include managing other staff scientists; conducting resource management studies, lake studies, and wetland reviews, studies, policy and ordinances; and preparing designs for stormwater ponds, streambank stabilization, landscape plans, wetland creations and mitigation, and wetland and waterway permitting. He also plans and completes field investigations such as wetland delineations, erosion control plans, waterway and natural resource inventories, and manages the construction of natural resource related projects.

EDUCATION

Bachelor of Science Environmental Studies & Geography, University of Wisconsin, Madison, Wisconsin, 1992

U.S. Army Corps of Engineers, Wetland Delineation, Certification Training Program, 1996

Wildland Hydrology, Instructor Dave Rosgen, Ph.D., Applied Fluvial Geomorphology, 2001

Wildland Hydrology, Instructor Dave Rosgen, Ph.D., River Morphology & Applications, 2003

Wildland Hydrology, Instructor Dave Rosgen, Ph.D., River Assessment and Monitoring, 2006

WDNR/UW-LaCrosse 2014-2019, Critical Methods, Wetland Delineation, 2014

WDNR/SEWRPC, Critical Methods, Wetland Delineation, 2010-2021

Aquatic Symbiosis, University of Wisconsin, Milwaukee, Wisconsin, 1995

Natural Resource Management, University of Wisconsin, Milwaukee, Wisconsin, 1996

Creating and Using Wetlands for Wastewater Disposal and Water Quality Improvement, University of Wisconsin, Madison, Wisconsin, 1995

Continuing Education, Urban Channel Design and Rehabilitation, University of Wisconsin, Madison, Wisconsin, 2000

University of Wisconsin LaCrosse, WDNR, Basic Wetland Delineation, 2000

University of Wisconsin LaCrosse, WDNR, Advanced Wetland Delineation, 2001

REGISTRATIONS

Certified Wetland Scientist #C-10, Lake County Stormwater Management Commission, 2002

MEMBERSHIPS

Member, Wisconsin Wetlands Association

Erica Gerloski Bachelor of Arts, Conservation and Environmental Science, University of Wisconsin - Milwaukee, Milwaukee, Wisconsin, 2018

Environmental Scientist
Mequon, Wisconsin

Erica is an environmental scientist with 5 years of experience in the field of natural resources, including wetland delineations, ecosystem restoration, and wildlife ecology and research. This experience has provided Erica the opportunity to be involved in a variety of projects not only in Wisconsin, but in other states in the Midwest and Western United States, which includes native ecosystem restoration, invasive species management, habitat restoration planning and grant writing, avian research and scientific writing, wildlife surveying, wetland permitting, and wetland identification and delineation.

EDUCATION

Bachelor of Arts, Conservation and Environmental Science, University of Wisconsin - Milwaukee, Milwaukee, Wisconsin, United States, 2018

CERTIFICATIONS & TRAINING

Advanced Wetland Delineation , University of Wisconsin - Lacrosse, Lacrosse, Wisconsin, United States, 2022

Certified Endangered Resources Reviewer, Wisconsin Department of Natural Resources, Milwaukee, Wisconsin, United States, 2022

Field Herpetology: Identification of Wisconsin Amphibians and Reptiles, UW-Milwaukee Field Station, Milwaukee, Wisconsin , United States, 2021

Basic Wetland Delineation, University of Wisconsin - LaCrosse, LaCrosse, Wisconsin, United States, 2021

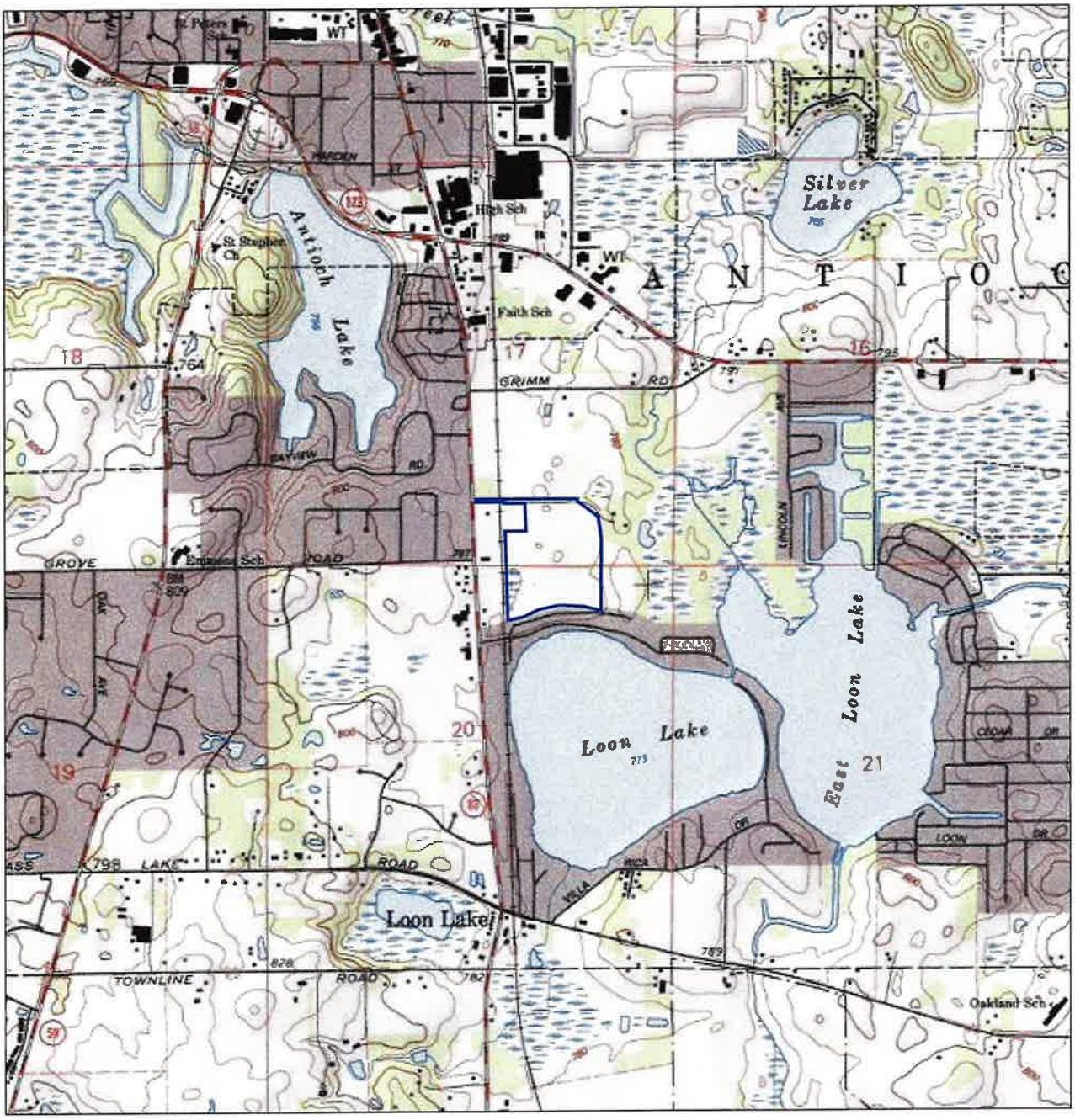
Appendix B FIGURES

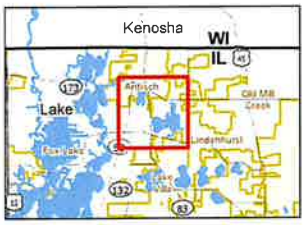
Figure 1. Project Location and Topography

Figure 2. NRCS Soil Survey Data – Hydric Ratings

Figure 3. National Wetlands Inventory

Figure 4. Field Collected Data





Legend

Project Boundary

0 1,000 2,000 Feet

(At original document size of 8.5x11)
1:24,000

N

Stantec

Project Location	Prepared by MZ on 2023-04-13
T46N, R10E, S17 & S20	TR by ST on 2023-04-13
Lake Co., Illinois	IR by BL on 2023-06-27

Client/Project 193806152

Nexamp, Inc.

Loon Lake Solar Project

Wetland Delineation Report

Figure No.

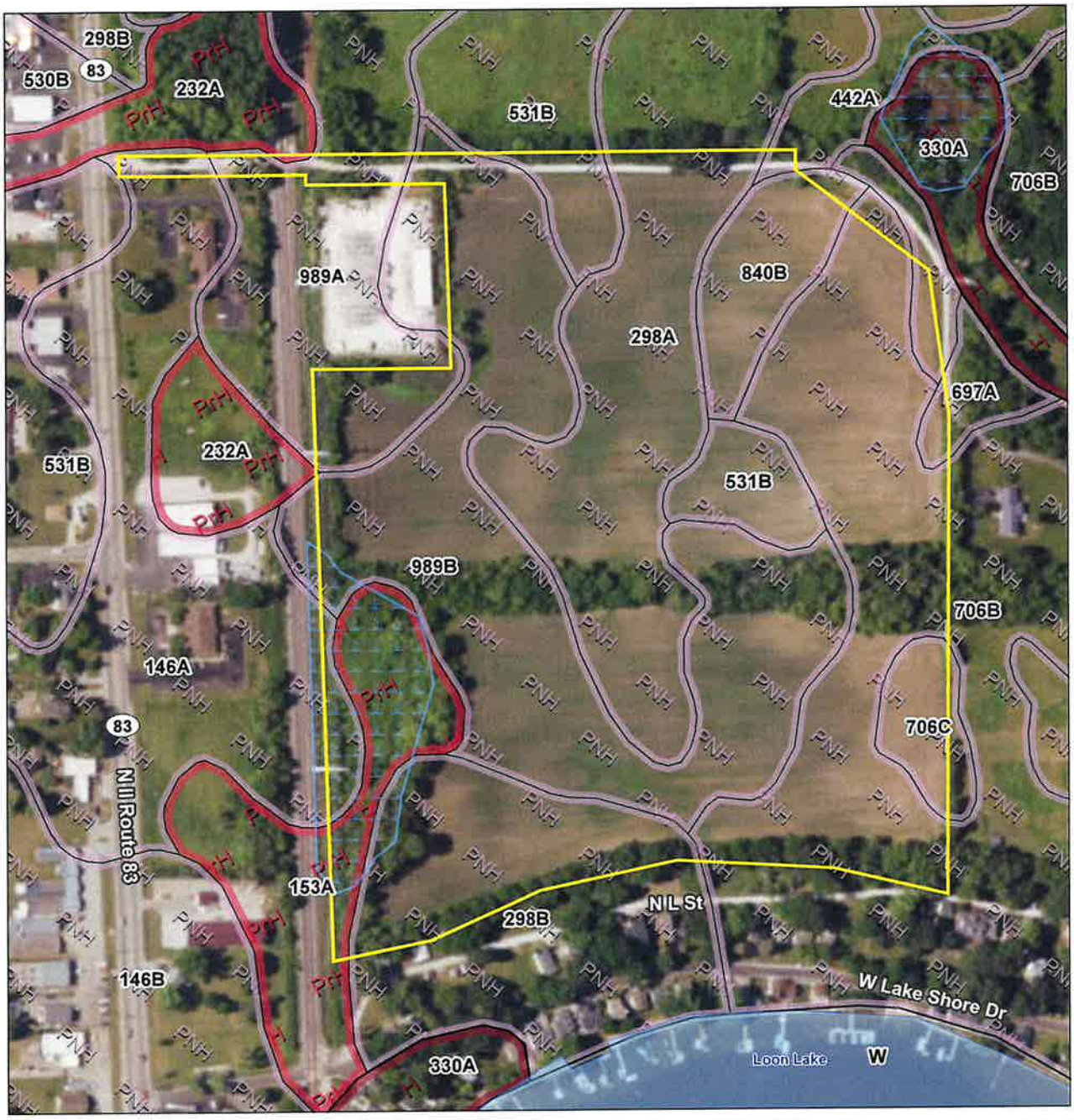
1

Title

Project Location and Topography

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: USGS 7.5' Topographic Quadrangle



Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS, NRCS
3. Background: NAIP 2022

Legend
- Project Boundary

NRCS Soil Survey Data
Hydric Soil Rating
- Hydric (H)
- Predominantly Hydric (PrH)
- Partially Hydric (PaH)*
- Predominantly Non-Hydric (PNH)
- Non-Hydric

National Hydrography Dataset
- Perennial Stream*
- Intermittent Stream*
- Ephemeral Stream*
- Canal/Ditch*
- Waterbody
- Swamp/Marsh

*No Features Within Data Frame

0 150 300 Feet
(At original document size of 8.5x11)
1:3,600

N

Stantec

Project Location	Prepared by MZ on 2023-04-13
T45N, R10E, S17 & S20	TR by ST on 2023-04-13
Lake Co., Illinois	IR by BL on 2023-06-27

Client/Project 193806152
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

Figure No.
2

Title
NRCS Soil Survey Data Hydric Ratings

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS, USFWS, Lake County
3. Background: NAIP 2022

Legend
- Project Boundary
- National Wetlands Inventory Feature
- Lake County Wetland Inventory Feature

National Hydrography Dataset
- Perennial Stream*
- Intermittent Stream*
- Ephemeral Stream*
- Canal/Ditch*
- Waterbody
- Swamp/Marsh

*No Features Within Data Frame

0 150 300 Feet
(At original document size of 8.5x11)
1:3,600

N

Stantec

Project Location	Prepared by MZ on 2023-04-13
T45N, R10E, S17 & S20	TR by ST on 2023-04-13
Lake Co., Illinois	IR by BL on 2023-06-27
Client/Project	193806152
Nexamp, Inc.	
Loon Lake Solar Project	
Wetland Delineation Report	
Figure No.	
3	
Title	
National Wetlands Inventory and Lake Co. Wetland Inventory Data	

Legend

- Project Boundary
- Sample Point
- Field Delineated Wetland

National Hydrography Dataset

- Perennial Stream*
- Intermittent Stream*
- Ephemeral Stream*
- Canal/Ditch*
- Waterbody
- Swamp/Marsh

0 150 300 Feet

(At original document size of 8.5x11) 1:3,600

N

Stantec

Project Location	Prepared by MZ on 2023-04-13
T46N, R10E, S17 & S20	TR by SR on 2023-04-28
Lake Co., Illinois	IR by BL on 2023-06-27

Client/Project
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

193806152

Figure No.
4

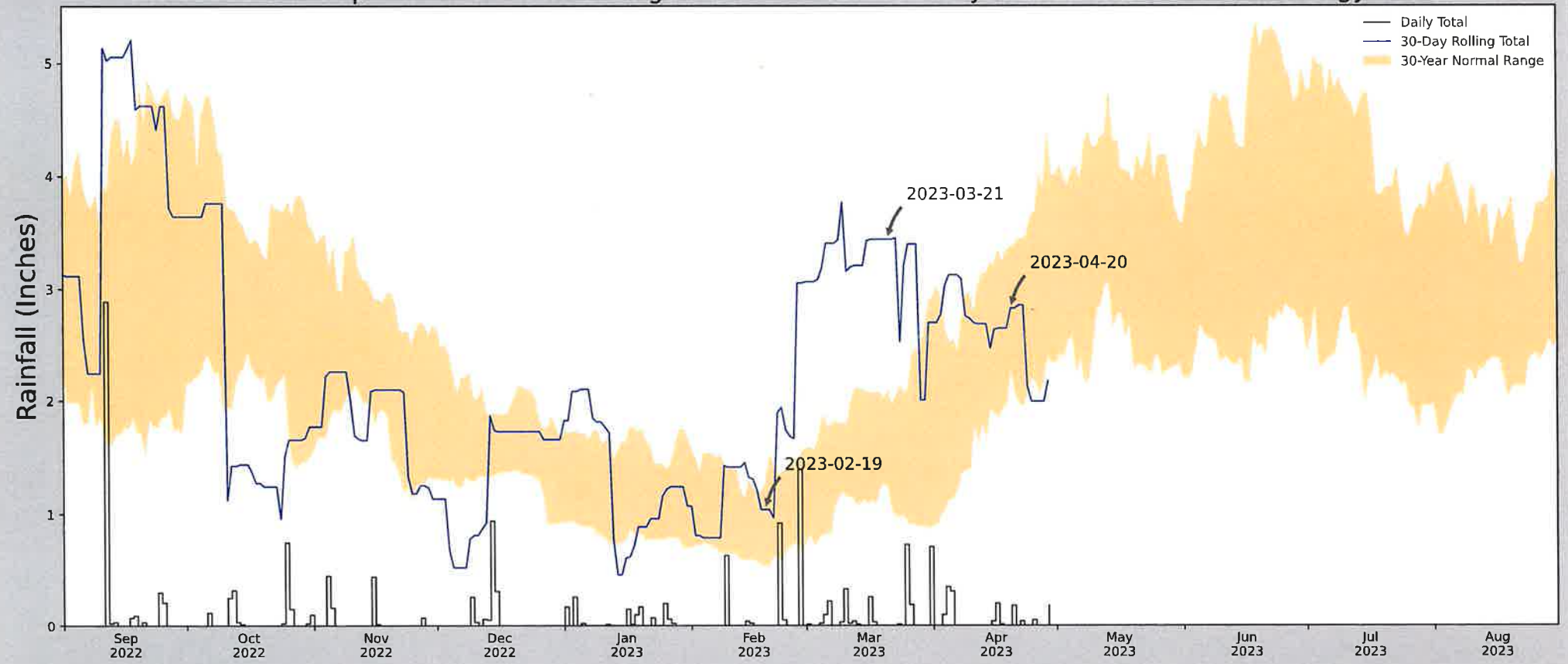
Title
Field Collected Data

*No Features Within Data Frame

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP 2022

Appendix C APT ANALYSIS

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.500808, -88.081333
Observation Date	2023-04-20
Elevation (ft)	839.391
Drought Index (PDSI)	Moderate wetness (2023-03)
WebWIMP H_2O Balance	Wet Season

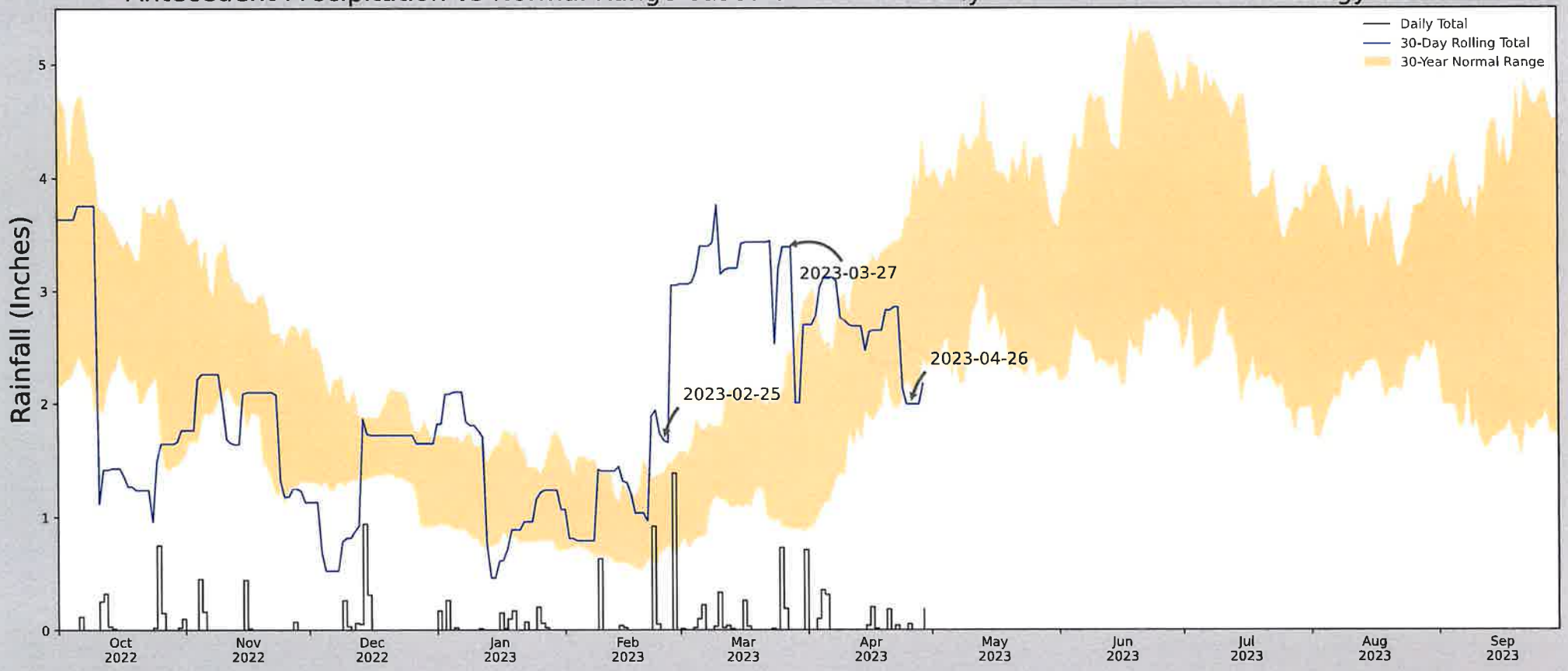
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-04-20	2.302362	3.373228	2.830709	Normal	2	3	6
2023-03-21	1.243307	2.082284	3.437008	Wet	3	2	6
2023-02-19	0.528346	1.254331	1.03937	Normal	2	1	2
Result							Normal Conditions - 14

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
KENOSHA RGNL AP	42.5953, -87.9383	732.94	9.779	106.451	5.442	8921	90
KENOSHA 3.8 WSW	42.5691, -87.9263	731.955	1.91	0.985	0.861	14	0
PLEASANT PRAIRIE 3.8 NW	42.5601, -87.9384	699.147	2.432	33.793	1.177	9	0
KENOSHA 2.2 SW	42.5584, -87.8807	702.1	3.884	30.84	1.868	1	0
PADDOCK LAKE 4 NE	42.6053, -88.0458	724.081	5.511	8.859	2.529	1	0
UNION GROVE WWTP	42.6906, -88.0336	717.848	8.174	15.092	3.802	2396	0
KENOSHA WWTP	42.5608, -87.8156	595.144	6.682	137.796	3.928	8	0
ANTIOCH	42.4811, -88.0994	750.0	11.381	17.06	5.316	2	0
RACINE WWTP	42.7028, -87.7858	591.864	10.735	141.076	6.345	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.500808, -88.081333
Observation Date	2023-04-26
Elevation (ft)	839.391
Drought Index (PDSI)	Moderate wetness (2023-03)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-04-26	2.168898	3.677953	1.992126	Dry	1	3	3
2023-03-27	0.922047	2.419685	3.393701	Wet	3	2	6
2023-02-25	0.715354	1.389764	1.681102	Wet	3	1	3
Result							Normal Conditions - 12

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
KENOSHA RGNL AP	42.5953, -87.9383	732.94	9.779	106.451	5.442	8921	90
KENOSHA 3.8 WSW	42.5691, -87.9263	731.955	1.91	0.985	0.861	14	0
PLEASANT PRAIRIE 3.8 NW	42.5601, -87.9384	699.147	2.432	33.793	1.177	9	0
KENOSHA 2.2 SW	42.5584, -87.8807	702.1	3.884	30.84	1.868	1	0
PADDOCK LAKE 4 NE	42.6053, -88.0458	724.081	5.511	8.859	2.529	1	0
UNION GROVE WWTP	42.6906, -88.0336	717.848	8.174	15.092	3.802	2396	0
KENOSHA WWTP	42.5608, -87.8156	595.144	6.682	137.796	3.928	8	0
ANTIOCH	42.4811, -88.0994	750.0	11.381	17.06	5.316	2	0
RACINE WWTP	42.7028, -87.7858	591.864	10.735	141.076	6.345	1	0

Appendix D WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W1-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Side slope | Local relief (concave, convex, none): Convex | Slope %: 6-8

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.461329 | Long: -88.09025 | Datum: WGS84

Soil Map Unit Name: Mundelein and Elliott silt loams, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Upland adjacent to gravel driveway. Soils are disturbed as it is loamy soil mixed with gravel fill material. Antecedent precipitation is normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1. Populus deltoides	10	Yes	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rhamnus cathartica	5	Yes	FAC
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Dipsacus laciniatus	10	Yes	UPL
2. Phalaris arundinacea	10	Yes	FACW
3. Galium aparine	10	Yes	FACU
4. Linaria vulgaris	5	No	UPL
5. Rhamnus cathartica	2	No	FAC
6. Daucus carota	2	No	UPL
7. Acer negundo	1	No	FAC
8.			
9.			
10.			
	40 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	18	x 3 =	54
FACU species	10	x 4 =	40
UPL species	17	x 5 =	85
Column Totals:	55 (A)		199 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					Loamy Sand	W/ gravel

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

Refusal at 6 in due to gravel. Fill material.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/20/2023

Applicant/Owner: Nexamp | State: IL | Sampling Point: W1-1W

Investigator(s): EG, BL | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 0-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.461278 | Long: -88.090224 | Datum: WGS84

Soil Map Unit Name: Mundelein and Elliott silt loams, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation ___, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes X No ___

Hydric Soil Present? Yes X No ___

Wetland Hydrology Present? Yes X No ___

Is the Sampled Area within a Wetland? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1. Ulmus americana	40	Yes	FACW
2. Populus deltoides	30	Yes	FAC
3.			
4.			
5.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rhamnus cathartica	10	Yes	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Phalaris arundinacea	30	Yes	FACW
2. Dipsacus laciniatus	5	No	UPL
3. Geum canadense	3	No	FAC
4. Taraxacum officinale	1	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	39	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	43	x 3 =	129
FACU species	1	x 4 =	4
UPL species	5	x 5 =	25
Column Totals:	119	(A)	298 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	98	10YR 4/6	2	C	M	Silt Loam	
18-24	2.5Y 5/1	60	10YR 5/4	40	D	M	Silt Loam	10YR FINE SANDY LOAM, 5Y silty clay loam, mixed matrix

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes X	No ___	Depth (inches): 6
Saturation Present (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W2-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Footslope | Local relief (concave, convex, none): Convex | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.458166 | Long: -88.088057 | Datum: WGS84

Soil Map Unit Name: Mundelein and Elliott silt loams, 2 to 4 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Veg and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Poa annua	40	Yes	FACU
2. Draba verna	20	Yes	UPL
3. Barbarea vulgaris	10	No	FAC
4. Erigeron annuus	10	No	FACU
5. Thlaspi arvense	5	No	FACU
6.			
7.			
8.			
9.			
10.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	55	x 4 =	220
UPL species	20	x 5 =	100
Column Totals:	85 (A)		350 (B)

Prevalence Index = B/A = 4.12

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Sandy Loam	
10-22	10YR 4/3	90	10YR 6/6	10	C	M	Sand	
22-24	2.5Y 4/2	95	10YR 5/6	5	C	M	Silty Clay Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes ___	No X	Depth (inches): ___
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 15

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W2-1W

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.457992 | Long: -88.088254 | Datum: WGS84

Soil Map Unit Name: Mundelein and Elliott silt loams, 2 to 4 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Veg and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	10 (A)		15 (B)

Prevalence Index = B/A = 1.5

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	98	10YR 4/4	2	C	M	Fine Sandy Loam	
5-12	7.5YR 5/1	70	10YR 5/4	30	C	M	Loamy Sand	
12-24	10YR 4/1	70	10YR 5/8	30	C	M	Silty Clay Loam	With gravel

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes ___	No X	Depth (inches): ___
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W3-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Footslope | Local relief (concave, convex, none): Convex | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.458898 | Long: -88.088308 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Veg and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Thlaspi arvense	10	Yes	FACU
2. Poa annua	10	Yes	FACU
3. Ranunculus acris	3	No	FAC
4. Erigeron annuus	2	No	FACU
5. Potentilla indica	1	No	FACU
6. Lepidium campestre	1	No	UPL
7.			
8.			
9.			
10.			
	27 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	3	x 3 =	9
FACU species	23	x 4 =	92
UPL species	1	x 5 =	5
Column Totals:	27 (A)		106 (B)

Prevalence Index = B/A = 3.93

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	98	10YR 3/4	2	C	M	Silt Loam	
8-24	10YR 5/1	50	10YR 5/6	50	C	M	Silty Clay	Mixed matrix

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Based on the lack of hydrophytic vegetation and hydrology indicators, this area is determined to be upland. This was likely inundated in wetter than normal years, but current conditions show that this area remains upland.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W3-1W

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 0-3

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.458917 | Long: -88.088309 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Veg and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	15 (A)		15 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W3-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	95	7.5YR 4/6	5	C	M	Silt Loam	
6-24	10YR 3/1	60	2.5Y 6/2	25	D	M	Silty Clay	15% redox 10YR 5/6

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes ___	No X	Depth (inches): ___
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W4-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Footslope | Local relief (concave, convex, none): Concave | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.459005 | Long: -88.089694 | Datum: WGS84

Soil Map Unit Name: Pella silty clay loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1. Morus alba	40	Yes	FAC
2. Maclura pomifera	40	Yes	FACU
3.			
4.			
5.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rhamnus cathartica	50	Yes	FAC
2.			
3.			
4.			
5.			
	50	= Total Cover	
Herb Stratum (Plot size: 5 ft)			
1. Glechoma hederacea	5	Yes	FACU
2. Taraxacum officinale	5	Yes	FACU
3. Rhamnus cathartica	3	No	FAC
4. Alliaria petiolata	2	No	FAC
5. Allium canadense	2	No	FACU
6.			
7.			
8.			
9.			
10.			
	17	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0	= Total Cover	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	95	x 3 =	285
FACU species	52	x 4 =	208
UPL species	0	x 5 =	0
Column Totals:	147 (A)		493 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W4-1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Loam	
10-24	2.5Y 5/3	90	10YR 5/4	10	C	M	Silty Clay Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W4-1W

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 0-2

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.45871 | Long: -88.089741 | Datum: WGS84

Soil Map Unit Name: Pella silty clay loam, 0 to 2 percent slopes | NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____ , Soil ____ , or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Wet meadow with scattered mesic hardwoods.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1. Acer saccharinum	30	Yes	FACW
2. Salix nigra	10	Yes	OBL
3.			
4.			
5.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1. Rhamnus cathartica	30	Yes	FAC
2. Malus angustifolia	5	No	UPL
3. Fraxinus americana	5	No	FACU
4. Catalpa speciosa	5	No	FACU
5.			
	45 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Dipsacus laciniatus	50	Yes	UPL
2. Carex lacustris	20	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	30	x 2 =	60
FAC species	30	x 3 =	90
FACU species	10	x 4 =	40
UPL species	55	x 5 =	275
Column Totals:	155 (A)		495 (B)

Prevalence Index = B/A = 3.19

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W4-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Sandy Clay Loam	
10-24	5Y 5/1	98	10YR 6/8	2	C	M	Clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W5-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Footslope | Local relief (concave, convex, none): Convex | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.460148 | Long: -88.089058 | Datum: WGS84

Soil Map Unit Name: Mundelein and Elliott silt loams, 2 to 4 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Veg and soil disturbed due to typical farming practices. Antecedent precipitation is normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Thlaspi arvense	15	Yes	FACU
2. Poa annua	10	Yes	FACU
3. Polygonum aviculare	5	No	FAC
4. Barbarea vulgaris	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	35 (A)		130 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W2-1U

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100					Loam	
6-24	10YR 5/3	100					Silty Clay Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W5-1W

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Toeslope | Local relief (concave, convex, none): Concave | Slope %: 1-2

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.46036 | Long: -88.089152 | Datum: WGS84

Soil Map Unit Name: Mundelein and Elliott silt loams, 2 to 4 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Emergent wetland on edge of farm field, vegetation along perimeter appears to have been mowed at some point during last years growing season.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1. Salix nigra	15	Yes	OBL
2. Populus deltoides	10	Yes	FAC
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Phalaris arundinacea	30	Yes	FACW
2. Xanthium strumarium	15	Yes	FAC
3. Typha angustifolia	15	Yes	OBL
4. Solidago gigantea	5	No	FACW
5. Phragmites australis	5	No	FACW
6. Rumex crispus	3	No	FAC
7. Geum canadense	1	No	FAC
8. Eleocharis erythropoda	1	No	OBL
9.			
10.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	31	x 1 =	31
FACW species	40	x 2 =	80
FAC species	29	x 3 =	87
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		198 (B)

Prevalence Index = B/A = 1.98

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W5-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/1	100					Silt Loam	
20-24	2.5Y 5/2	98	10YR 5/6	2	C	M	Silty Clay Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes X	No ___	Depth (inches): 22
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W6-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Footslope | Local relief (concave, convex, none): Convex | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.460273 | Long: -88.087765 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Veg and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5 ft)			
1. Stellaria media	30	Yes	FACU
2. Polygonum aviculare	5	No	FAC
3. Ranunculus abortivus	2	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	37 = Total Cover		

Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	5	x 3 =	15
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	37 (A)		139 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W6-1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/1	100					Silt Loam	
12-24	2.5Y 6/3	60	10YR 5/6	40	C	M	Silty Clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W6-1W

Investigator(s): EG, BL | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 0-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.460559 | Long: -88.087809 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Wetland depression in agricultural field, planted in corn last year. Soil and veg disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Ranunculus abortivus	5	Yes	FACW
2. Thlaspi arvense	1	No	FACU
3. Draba verna	5	Yes	UPL
4. Alliaria petiolata	3	No	FAC
5. Ranunculus acris	2	No	FAC
6.			
7.			
8.			
9.			
10.			
	16 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	5	x 3 =	15
FACU species	1	x 4 =	4
UPL species	5	x 5 =	25
Column Totals:	16 (A)		54 (B)

Prevalence Index = B/A = 3.38

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is disturbed due to typical farming practices caused by plowing and herbicide use.

SOIL

Sampling Point: W6-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	98	10YR 3/6	2	C	M	Silt Loam	
8-24	5Y 6/2	60	10YR 6/8	40	C	M	Silty Clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes ___	No X	Depth (inches): ___
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W7/W8-1U

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Side slope | Local relief (concave, convex, none): Convex | Slope %: 2-4

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.459585 | Long: -88.088118 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Veg and soil disturbed due to typical farming practices. Shared upland sample point. Antecedent precipitation is normal.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5 ft)			
1. Poa annua	15	Yes	FACU
2. Thlaspi arvense	5	No	FACU
3. Draba verna	5	No	UPL
4. Ranunculus abortivus	2	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	27 = Total Cover		

Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	2	x 2 =	4
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	5	x 5 =	25
Column Totals:	27 (A)		109 (B)

Prevalence Index = B/A = 4.04

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W7/W8-1U

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Fine Sandy Loam	
8-24	10YR 5/3	80	10YR 5/6	20	C	M	Silty Clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W7-1W

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 0-3

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.459622 | Long: -88.087864 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Veg and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Polygonum aviculare	5	Yes	FAC
2. Phalaris arundinacea	1	No	FACW
3. Ranunculus acris	1	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	7 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	6	x 3 =	18
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	7 (A)		20 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W7-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	98	10YR 3/4	2	C	M	Sandy Loam	
8-24	5Y 5/2	70	10YR 5/6	30	C	M	Sandy Clay Loam	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes ___	No X	Depth (inches): ___
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Loon Lake | City/County: Lake County | Sampling Date: 04/26/2023

Applicant/Owner: Nexamp Inc. | State: IL | Sampling Point: W8-1W

Investigator(s): EG MR | Section, Township, Range: T46N, R10E, S17 & S20

Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope %: 0-3

Subregion (LRR or MLRA): MLRA 110 | Lat: 42.459576 | Long: -88.088422 | Datum: WGS84

Soil Map Unit Name: Beecher silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ___ No X

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks: (Explain alternative procedures here or in a separate report.)
Antecedent precipitation is normal. Vegetation and soil disturbed due to typical farming practices.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft)	Absolute % Cover	Dominant Species	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 ft)			
1. Polygonum avigulare	6	Yes	FAC
2. Ranunculus abortivus	1	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	7 = Total Cover		
Woody Vine Stratum (Plot size: 30 ft)			
1.			
2.			
	0 = Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	6	x 3 =	18
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	7 (A)		20 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

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

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

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W8-1W

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	95	10YR 3/4	5	C	M	Silt Loam	
8-18	10YR 5/1	80	7.5YR 5/6	20	C	M	Silty Clay Loam	
18-24	10YR 5/1	50	10YR 5/6	50	C	M	Silty Clay	

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

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils[3]:

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present	Yes ___	No X	Depth (inches): ___
Water Table Present	Yes ___	No X	Depth (inches): ___
Saturation Present (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

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

Remarks:

Appendix E SITE PHOTOGRAPHS

Sample point W1-1W and W1-1U, facing west

Sample point W2-1U, facing southwest

Sample point W2-1W, facing west

Sample point W3-1U, facing west

Sample point W3-1W, facing west

Sample point W4-1U, facing west

Sample point W4-1W, facing south

Sample point W5-1U, facing northwest

Sample point W5-1W, facing west

Sample point W6-1U, facing north

Sample point W6-1W, facing north

Sample point W7 and W8-1U, facing north

Sample point W7-1W, facing east

Sample point W8-1W, facing northeast

Appendix F FLORISTIC QUALITY ASSESSMENT

Loon Lake W1
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Regi Chicago Region USACE
FQA DB Publ 2017
FQA DB Desc https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.46128
Longitude: -88.0902
Weather Not 40s and sunny, partly cloudy in the afternoon
Duration Notes:
Community T small wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Publi Public

Conservatism-Based Metrics:

Total Mean C	0.6
Native Mean	1.3
Total FQI:	1.6
Native FQI:	2.3
Adjusted FQI	8.5
% C value 0:	71.4
% C value 1-3	28.6
% C value 4-6	0
% C value 7-1	0
Native Tree M	1.5
Native Shrub	n/a
Native Herba	1

Species Richness:

Total Species	7	
Native Speci	3	42.90%
Non-native S	4	57.10%

Species Wetness:

Mean Wetne	0.1
Native Mean	-0.3

Physiognomy Metrics:

Tree:	2	28.60%
Shrub:	1	14.30%
Vine:	0	0%
Forb:	3	42.90%
Grass:	1	14.30%
Sedge:	0	0%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	6	85.70%
Biennial:	1	14.30%
Native Annu	0	0%
Native Peren	3	42.90%
Native Bienn	0	0%

Species:

Scientific Nai	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Dipsacus laci	Dipsacacea	DIPLAC	non-native	0	2	forb	biennial	cut-leaf teasel
Geum canad	Rosaceae	GEUCAN	native	1	0	forb	perennial	white avens
Phalaris arun	Poaceae	PHAARU	non-native	0	-1	grass	perennial	reed canary grass
Populus delt	Salicaceae	POPDEL	native	0	0	tree	perennial	eastern cottonwood
Rhamnus cat	Rhamnace	RHACAT	non-native	0	0	shrub	perennial	european buckthorn
Taraxacum o	Asteraceae	TAROFF	non-native	0	1	forb	perennial	common dandelion
Ulmus ameri	Ulmaceae	ULMAME	native	3	-1	tree	perennial	american elm

Loon Lake W2
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Region Chicago Region USACE
FQA DB Publica 2017
FQA DB Descri https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.45799
Longitude: -88.0883
Weather Notes 40s and sunny, partly cloudy in the afternoon
Duration Notes:
Community Ty small wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Public: Public

Conservatism-Based Metrics:

Total Mean C:	0.5	
Native Mean C	1	
Total FQI:	0.7	
Native FQI:	1	
Adjusted FQI:	7.1	
% C value 0:	50	
% C value 1-3:	50	
% C value 4-6:	0	
% C value 7-10	0	
Native Tree Me	n/a	
Native Shrub M	n/a	
Native Herbace	1	

Species Richness:

Total Species:	2	
Native Species:	1	50%
Non-native Spe	1	50%

Species Wetness:

Mean Wetness	-1.5
Native Mean W	-2

Physiognomy Metrics:

Tree:	0	0%
Shrub:	0	0%
Vine:	0	0%
Forb:	0	0%
Grass:	1	50%
Sedge:	1	50%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	2	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perenni	1	50%
Native Biennial	0	0%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Eleocharis palu	Cyperacea	ELEERY	native	1	-2	sedge	perennial	common spike-rush
Phalaris arundi	Poaceae	PHAARU	non-native	0	-1	grass	perennial	reed canary grass

Loon Lake W3
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Regior Chicago Region USACE
FQA DB Public: 2017
FQA DB Descri https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.45892
Longitude: -88.0883
Weather Note: 40s and sunny, partly cloudy in the afternoon
Duration Notes:
Community Ty small wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Public: Public

Conservatism-Based Metrics:

Total Mean C:	1
Native Mean C	1
Total FQI:	1
Native FQI:	1
Adjusted FQI:	10
% C value 0:	0
% C value 1-3:	100
% C value 4-6:	0
% C value 7-10	0
Native Tree M	n/a
Native Shrub M	n/a
Native Herbac	1

Species Richness:

Total Species:	1	
Native Species	1	100%
Non-native Spe	0	0%

Species Wetness:

Mean Wetness	-2
Native Mean W	-2

Physiognomy Metrics:

Tree:	0	0%
Shrub:	0	0%
Vine:	0	0%
Forb:	0	0%
Grass:	0	0%
Sedge:	1	100%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	1	100%
Biennial:	0	0%
Native Annual:	0	0%
Native Perenni	1	100%
Native Biennia	0	0%

Species:

Scientific Nam	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Eleocharis palu	Cyperacea	ELEERY	native	1	-2	sedge	perennial	common spike-rush

Loon Lake W4
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Regi Chicago Region USACE
FQA DB Publi 2017
FQA DB Desc https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.45871
Longitude: -88.0897
Weather Not 40s and sunny, partly cloudy in the afternoon
Duration Notes:
Community T small wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Publi Public

Conservatism-Based Metrics:

Total Mean C	2.5	
Native Mean	4	
Total FQI:	7.1	
Native FQI:	8.9	
Adjusted FQI	31.6	
% C value 0:	37.5	
% C value 1-3	12.5	
% C value 4-6	50	
% C value 7-1	0	
Native Tree M	3.8	
Native Shrub	n/a	
Native Herba	5	

Species Richness:

Total Species	8	
Native Specie	5	62.50%
Non-native S	3	37.50%

Species Wetness:

Mean Wetne	0.1
Native Mean	-0.4

Physiognomy Metrics:

Tree:	5	62.50%
Shrub:	1	12.50%
Vine:	0	0%
Forb:	1	12.50%
Grass:	0	0%
Sedge:	1	12.50%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	0	0%
Perennial:	7	87.50%
Biennial:	1	12.50%
Native Annua	0	0%
Native Peren	5	62.50%
Native Bienn	0	0%

Species:

Scientific Nar	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Acer sacchari	Aceraceae	ACESAI	native	1	-1	tree	perennial	silver maple
Carex lacustr	Cyperacea	CXLACU	native	5	-2	sedge	perennial	lakebank sedge
Catalpa speci	Bignoniace	CATSPE	non-native	0	1	tree	perennial	northern catalpa
Dipsacus laci	Dipsacace	DIPLAC	non-native	0	2	forb	biennial	cut-leaf teasel
Fraxinus ame	Oleaceae	FRAAME	native	5	1	tree	perennial	white ash
Malus ioensis	Rosaceae	MALIOE	native	4	2	tree	perennial	iowa crab apple
Rhamnus cat	Rhamnace	RHACAT	non-native	0	0	shrub	perennial	european buckthorn
Salix nigra	Salicaceae	SALNIG	native	5	-2	tree	perennial	black willow

Loon Lake W5
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Regi Chicago Region USACE
FQA DB Publi 2017
FQA DB Desc https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.46036
Longitude: -88.0892
Weather Not 40s and sunny, partly cloudy in the afternoon
Duration Notes:
Community T small wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Publi Public

Conservatism-Based Metrics:

Total Mean C	1.1
Native Mean	1.8
Total FQI:	3.5
Native FQI:	4.4
Adjusted FQI	13.9
% C value 0:	60
% C value 1-3	20
% C value 4-6	20
% C value 7-1	0
Native Tree M	2.5
Native Shrub	n/a
Native Herba	1.5

Species Richness:

Total Species	10	
Native Specie	6	60%
Non-native S	4	40%

Species Wetness:

Mean Wetne	-0.9
Native Mean	-0.8

Physiognomy Metrics:

Tree:	2	20%
Shrub:	0	0%
Vine:	0	0%
Forb:	5	50%
Grass:	2	20%
Sedge:	1	10%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	1	10%
Perennial:	9	90%
Biennial:	0	0%
Native Annua	1	10%
Native Peren	5	50%
Native Bienn	0	0%

Species:

Scientific Nar	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Eleocharis pa	Cyperacea	ELEERY	native	1	-2	sedge	perennial	common spike-rush
Geum canadı	Rosaceae	GEUCAN	native	1	0	forb	perennial	white avens
Phalaris arun	Poaceae	PHAARU	non-native	0	-1	grass	perennial	reed canary grass
Phragmites a	Poaceae	PHRAUSU	non-native	0	-1	grass	perennial	common reed
Populus delt	Salicaceae	POPDEL	native	0	0	tree	perennial	eastern cottonwood
Rumex crispı	Polygonac	RUMCRI	non-native	0	0	forb	perennial	curly dock
Salix nigra	Salicaceae	SALNIG	native	5	-2	tree	perennial	black willow
Solidago giga	Asteracea	SOLGIG	native	4	-1	forb	perennial	late goldenrod
Typha angust	Typhaceae	TYPANG	non-native	0	-2	forb	perennial	narrow-leaf cat-tail
Xanthium str	Asteracea	XANSTR	native	0	0	forb	annual	rough cockleburr

Loon Lake W6
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Region: Chicago Region USACE
FQA DB Publicat 2017
FQA DB Descript https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.46056
Longitude: -88.0878
Weather Notes: 40s and sunny, partly cloudy in the afternoon
Duration Notes:
Community Typ small wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Public: Public

Conservatism-Based Metrics:

Total Mean C:	0.2	
Native Mean C:	1	
Total FQI:	0.4	
Native FQI:	1	
Adjusted FQI:	4.5	
% C value 0:	80	
% C value 1-3:	20	
% C value 4-6:	0	
% C value 7-10:	0	
Native Tree Mea	n/a	
Native Shrub Me	n/a	
Native Herbacec	1	

Species Richness:

Total Species:	5	
Native Species:	1	20%
Non-native Spec	4	80%

Species Wetness:

Mean Wetness:	0.4
Native Mean We	-1

Physiognomy Metrics:

Tree:	0	0%
Shrub:	0	0%
Vine:	0	0%
Forb:	5	100%
Grass:	0	0%
Sedge:	0	0%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	3	60%
Perennial:	1	20%
Biennial:	1	20%
Native Annual:	1	20%
Native Perennial	0	0%
Native Biennial:	0	0%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Alliaria petiolata	Brassicace	ALLPET	non-native	0	0	forb	biennial	garlic-mustard
Draba verna	Brassicace	DRAVER	non-native	0	2	forb	annual	vernal whitlow-grass
Ranunculus abo	Ranunculа	RANABO	native	1	-1	forb	annual	kidney-leaf buttercup
Ranunculus acri	Ranunculа	RANACR	non-native	0	0	forb	perennial	tall buttercup
Thlaspi arvense	Brassicace	THLARV	non-native	0	1	forb	annual	field pennycress

Loon Lake W7
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Region: Chicago Region USACE
FQA DB Publication Y 2017
FQA DB Description: https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Maddy Reick
Latitude: 42.45962
Longitude: -88.0879
Weather Notes: 40s and sunny, partly cloudy after noon
Duration Notes:
Community Type No: small wetlands in depression sin ag field, previously planted as corn
Other Notes:
Private/Public: Public

Conservatism-Based Metrics:

Total Mean C:	0
Native Mean C:	0
Total FQI:	0
Native FQI:	0
Adjusted FQI:	0
% C value 0:	100
% C value 1-3:	0
% C value 4-6:	0
% C value 7-10:	0
Native Tree Mean C:	n/a
Native Shrub Mean C	n/a
Native Herbaceous M	n/a

Species Richness:

Total Species:	3	
Native Species:	0	0%
Non-native Species:	3	100%

Species Wetness:

Mean Wetness:	-0.3
Native Mean Wetnes	0

Physiognomy Metrics:

Tree:	0	0%
Shrub:	0	0%
Vine:	0	0%
Forb:	2	66.70%
Grass:	1	33.30%
Sedge:	0	0%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	1	33.30%
Perennial:	2	66.70%
Biennial:	0	0%
Native Annual:	0	0%
Native Perennial:	0	0%
Native Biennial:	0	0%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Phalaris arundinacea	Poaceae	PHAARU	non-native	0	-1	grass	perennial	reed canary grass
Polygonum aviculare	Polygonac	POLAVI	non-native	0	0	forb	annual	yard knotweed
Ranunculus acris	Ranuncula	RANACR	non-native	0	0	forb	perennial	tall buttercup

Loon Lake
4/26/2023
Loon Lake
Antioch
Lake
IL
USA
FQA DB Region: Chicago Region USACE
FQA DB Publicat 2017
FQA DB Descript https://www.lrc.usace.army.mil/Missions/Regulatory/FQA.aspx

Practitioner: Antioch
Latitude: Lake
Longitude: IL
Weather Notes: 43 degrees and sunny, partly cloudy in afternoon
Duration Notes: survey points taken on 4/26/23
Community Type smell wetlands in depressions in ag field, previously planted as corn
Other Notes:
Private/Public: Public

Conservatism-Based Metrics:

Total Mean C:	0.5	
Native Mean C:	1	
Total FQI:	0.7	
Native FQI:	1	
Adjusted FQI:	7.1	
% C value 0:	50	
% C value 1-3:	50	
% C value 4-6:	0	
% C value 7-10:	0	
Native Tree Mea	n/a	
Native Shrub Me	n/a	
Native Herbaceo	1	

Species Richness:

Total Species:	2	
Native Species:	1	50%
Non-native Spec	1	50%

Species Wetness:

Mean Wetness:	-0.5	
Native Mean We	-1	

Physiognomy Metrics:

Tree:	0	0%
Shrub:	0	0%
Vine:	0	0%
Forb:	2	100%
Grass:	0	0%
Sedge:	0	0%
Rush:	0	0%
Fern:	0	0%
Bryophyte:	0	0%

Duration Metrics:

Annual:	2	100%
Perennial:	0	0%
Biennial:	0	0%
Native Annual:	1	50%
Native Perennial	0	0%
Native Biennial:	0	0%

Species:

Scientific Name	Family	Acronym	Native?	C	W	Physiogno	Duration	Common Name
Polygonum avicu	Polygonaci	POLAVI	non-native	0	0	forb	annual	yard knotweed
Ranunculus abor	Ranuncula	RANABO	native	1	-1	forb	annual	kidney-leaf buttercup

Appendix G OFF-SITE AERIAL IMAGERY ANALYSIS

Loon Lake Solar Project - Antioch; Lake County, IL

Project Location: Township 46N, Range 10E, Section 17 & 21

Investigator: Brian Lennie, Erica Gerloski, Maddy Reick

Wetland Determination from Aerial Imagery - Recording Form

Area	Hydric Soils Present?[1]	Identified on NWI / WWI?	Percent of images with wet signatures in normal years?[2]	Other hydrology indicators present?[3]	Wetland?
Area A	Yes	No	60	Soil saturation, wetland veg	W6
Area B	Yes	No	80	Standing water	W5
Area C	Yes	No	40	Soil saturation, wetland veg	W8
Area D	Yes	No	40	Soil saturation, wetland veg	W7
Area E	Yes	No	40	Soil saturation, wetland veg	W3
Area F	Yes	No	40	Soil saturation, wetland veg	W2
Area G	Yes	No	60	None	No

[1] "Hydric Soils Present?" is determined from NRCS hydric rating. "Not Hydric" is the only category considered to not have hydric soils. Field sampling for the presence/absence of hydric soil indicators can be used in lieu of the hydric rating if appropraitely documented by providing completed field data sheets.

[2] Use "Percent with wet signatures" from Hydrology Analysis table.

[3] Answer N/A if field verification not required and was not conducted. See Decision Matrix

Loon Lake Solar Project - Antioch; Lake County, IL

Project Location: Township 46N, Range 10E, Section 17 & 21

Investigator: Brian Lennie, Erica Gerloski, Maddy Reick

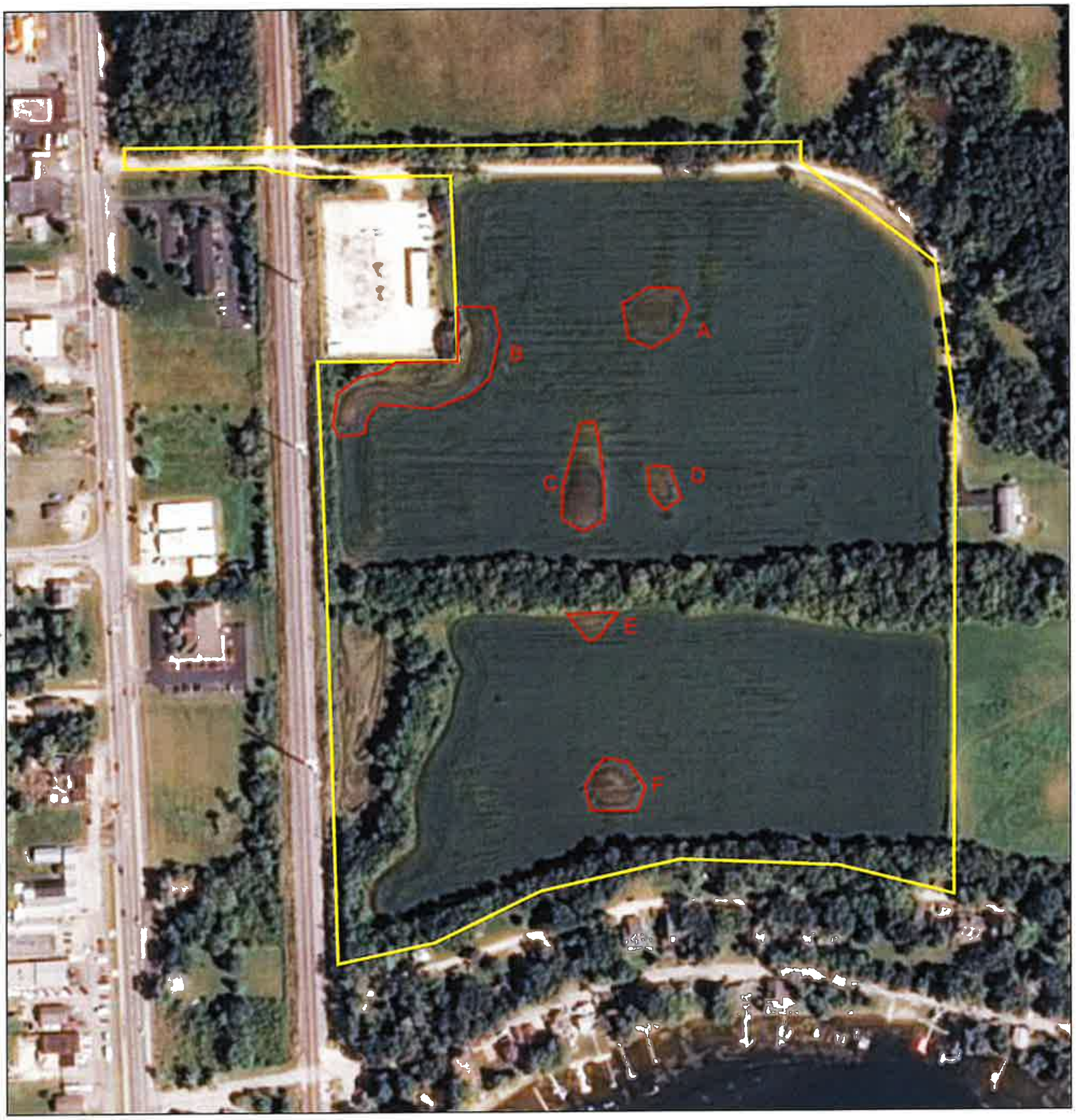
Wetland Hydrology from Aerial Imagery - Recording Form

Image Date[1]	Image Source	Climate Condition	Image Interpretation(s)							ditional No
			Area A	Area B	Area C	Area D	Area E	Area F	Area G	
8-25-2011	NAIP	Wet	DO	DO	DO	DO	CS	DO	NSS	
6-18-2012	NAIP	Normal	SS	NSS	NSS	NSS	NSS	NSS	NSS	
6-12-2014	NAIP	Normal	SS	SW, SS	SS	SW	SS	SW	SS	
8-21-2015	NAIP	Normal	NV	SS	CS	NV	NV	NV	NV	
8-31-2017	NAIP	Normal	NV	SS	NV	CS	AP	NV	AP	
8-8-2019	NAIP	Wet	CS	SW, SS	CS	CS, SS	CS	CS	SS, SW	
9-5-2021	NAIP		CS	SS	SS	NV	NV	NV	NV	
6-23-2022	NAIP	Normal	CS	NV	NV	NV	NV	CS	NV	
Normal Climate Condition			Area A	Area B	Area C	Area D	Area E	Area F	Area G	
Number of years with normal climate			5	5	5	5	5	5	5	
Number with wet signatures			3	3	2	2	2	2	3	
Percent with wet signatures			60	60	40	40	40	40	60	

KEY		
WS - wetland signature	SS - soil wetness signature	CS - crop stress
NC - not cropped	AP - altered pattern	NV - normal vegetative cover
DO - Drowned out	SW - standing water	NSS - no soil wetness signature

Other labels or comments:

[1] If only the year is known, assumption is made that FSA slides are taken in July; as a result, climate condition analysis focuses on three months prior to July



Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Stantec

Project Location
T46N, R10E, S17 & S20
Lake Co., Illinois

Prepared by MZ on 2023-04-13
TR by XXX on 2023-XX-XX
IR by XXX on 2023-XX-XX

Client/Project
193806152

Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

Title
Historical Aerial Review
(8/26/2011 Aerial Imagery)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP

Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Stantec

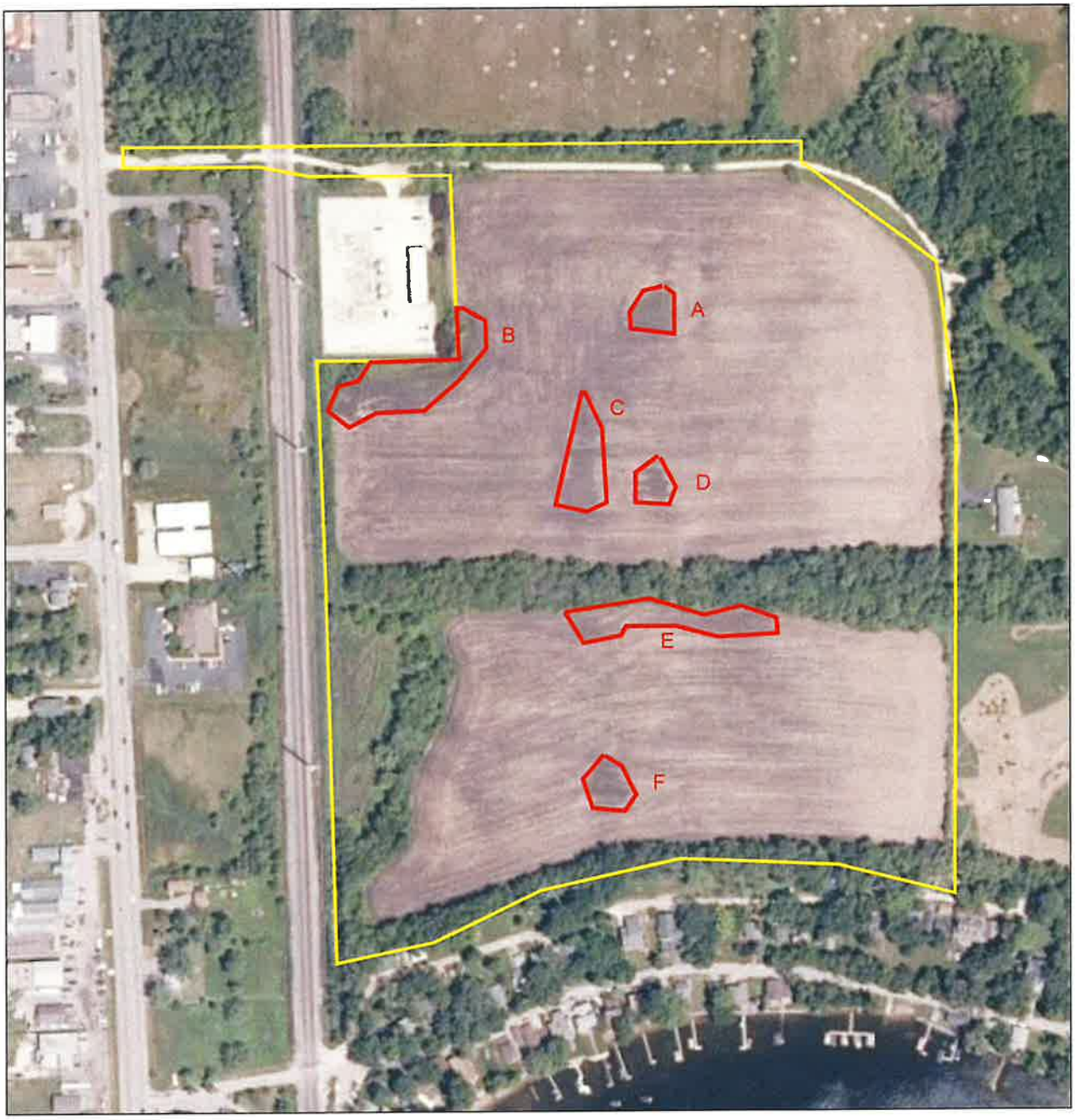
Project Location
T46N, R10E, S17 & S20
Lake Co., Illinois

Prepared by MZ on 2023-04-13
TR by XXX on 2023-XX-XX
IR by XXX on 2023-XX-XX

Client/Project 193806152
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

Title
Historical Aerial Review (6/19/2012 Aerial Imagery)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP



Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP

Stantec

Project Location	Prepared by MZ on 2023-04-13
T46N, R10E, S17 & S20	TR by XXX on 2023-XX-XX
Lake Co., Illinois	IR by XXX on 2023-XX-XX

Client/Project 193806152

Nexamp, Inc.

Loon Lake Solar Project

Wetland Delineation Report

Title

Historical Aerial Review (6/13/2014 Aerial Imagery)

Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Stantec

Notes

1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP

Project Location	Prepared by MZ on 2023-04-13
T46N, R10E, S17 & S20	TR by XXX on 2023-XX-XX
Lake Co., Illinois	IR by XXX on 2023-XX-XX

Client/Project 193806152

Nexamp, Inc.

Loon Lake Solar Project

Wetland Delineation Report

Title

Historical Aerial Review (8/22/2015 Aerial Imagery)

Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Stantec

Project Location
T46N, R10E, S17 & S20
Lake Co., Illinois

Prepared by MZ on 2023-04-13
TR by XXX on 2023-XX-XX
IR by XXX on 2023-XX-XX

Client/Project
193806152
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

Title
Historical Aerial Review
(9/1/2017 Aerial Imagery)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP

Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Stantec

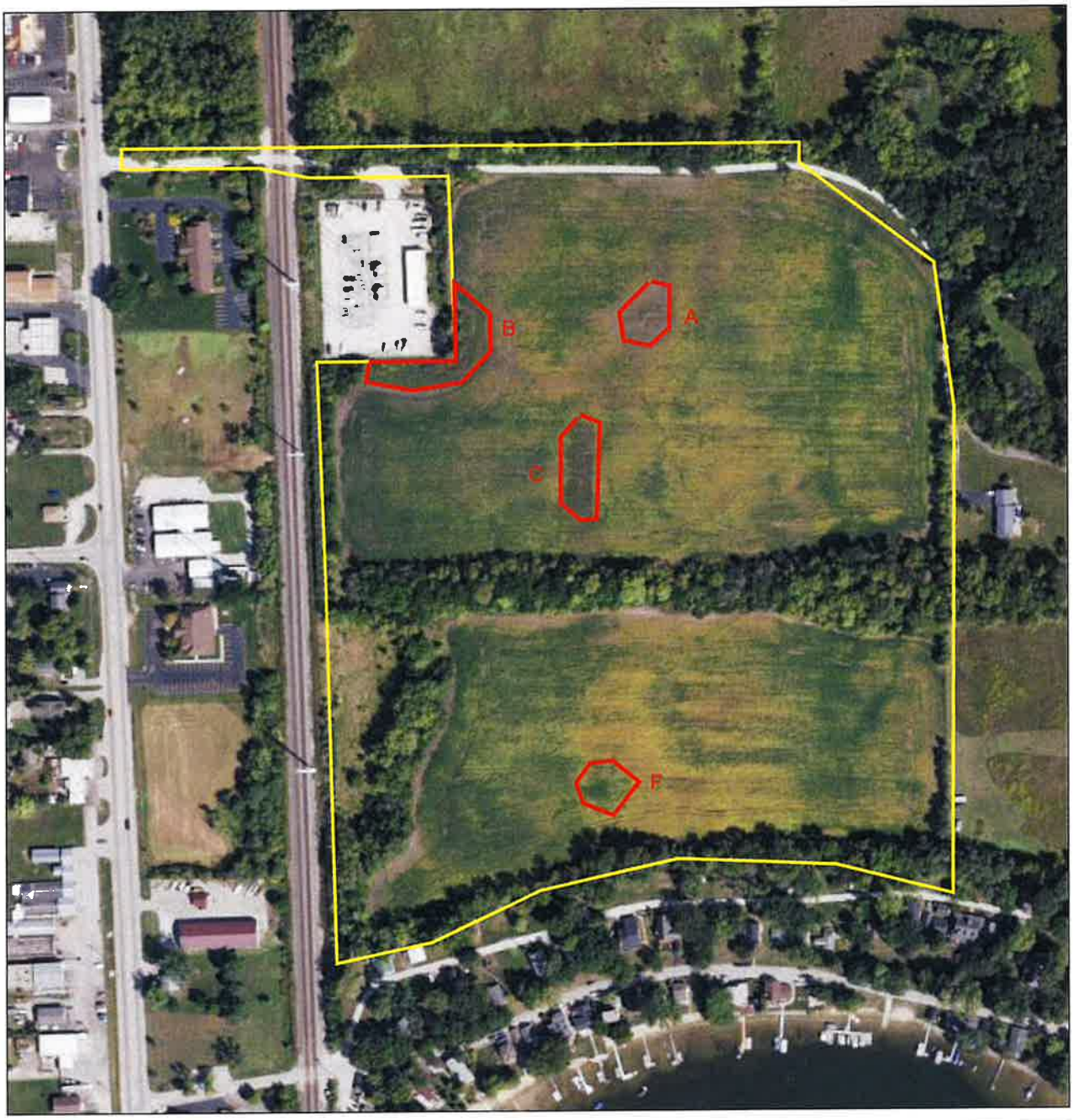
Project Location
T45N, R10E, S17 & S20
Lake Co., Illinois

Prepared by MZ on 2023-04-13
TR by XXX on 2023-XX-XX
IR by XXX on 2023-XX-XX

Client/Project
193806152
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

Title
Historical Aerial Review
(8/9/2019 Aerial Imagery)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP



Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

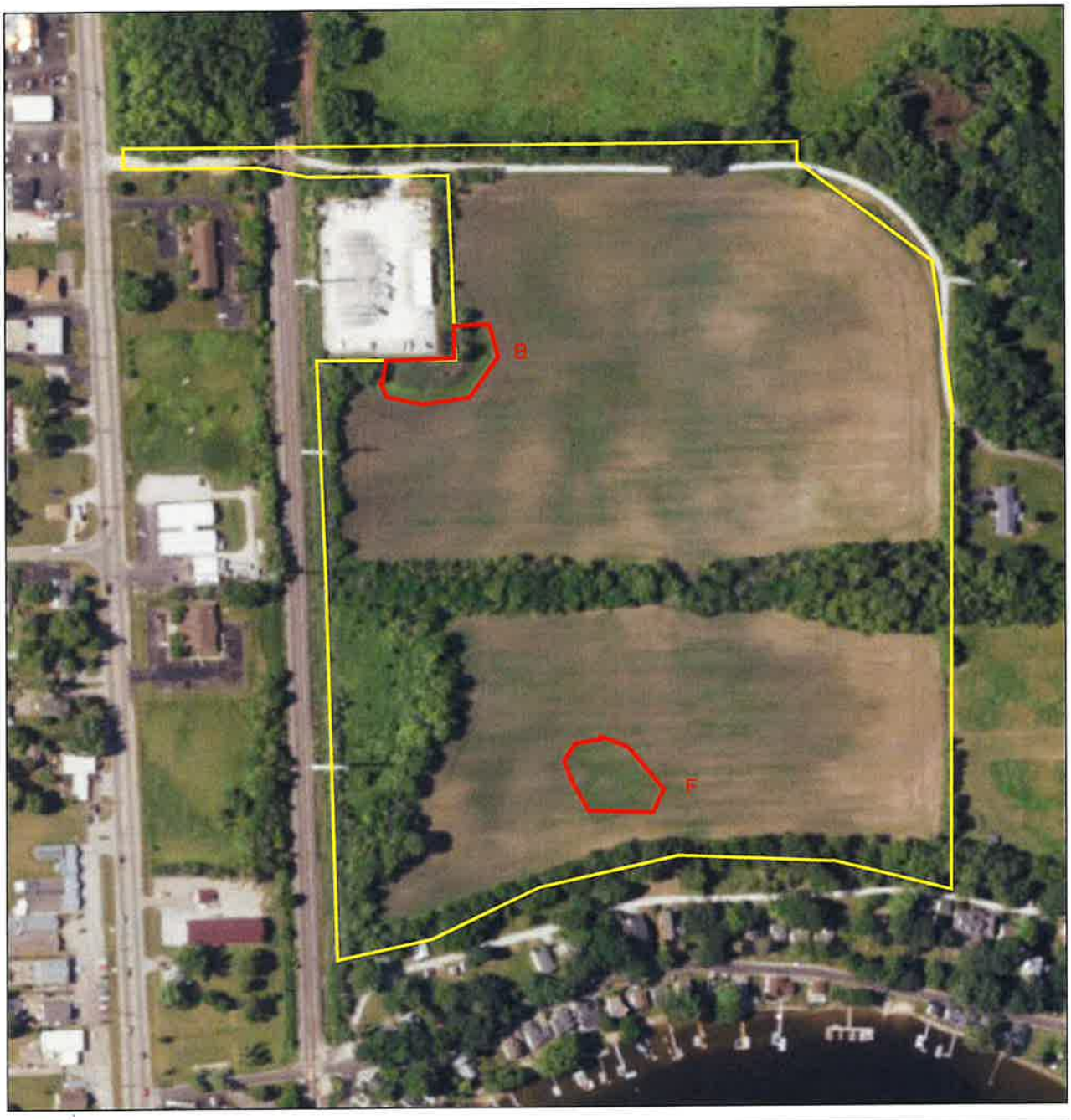
Stantec

Project Location	Prepared by MZ on 2023-04-13
T46N, R10E, S17 & S20	TR by XXX on 2023-XX-XX
Lake Co., Illinois	IR by XXX on 2023-XX-XX

Client/Project 193806152
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

Title
Historical Aerial Review (9/5/2021 Aerial Imagery)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP



Legend

Project Boundary

0 150 300 Feet

(At original document size of 8.5x11)
1:3,600

N

Stantec

Project Location
T46N, R10E, S17 & S20
Lake Co., Illinois

Prepared by MZ on 2023-04-13
TR by XXX on 2023-XX-XX
IR by XXX on 2023-XX-XX

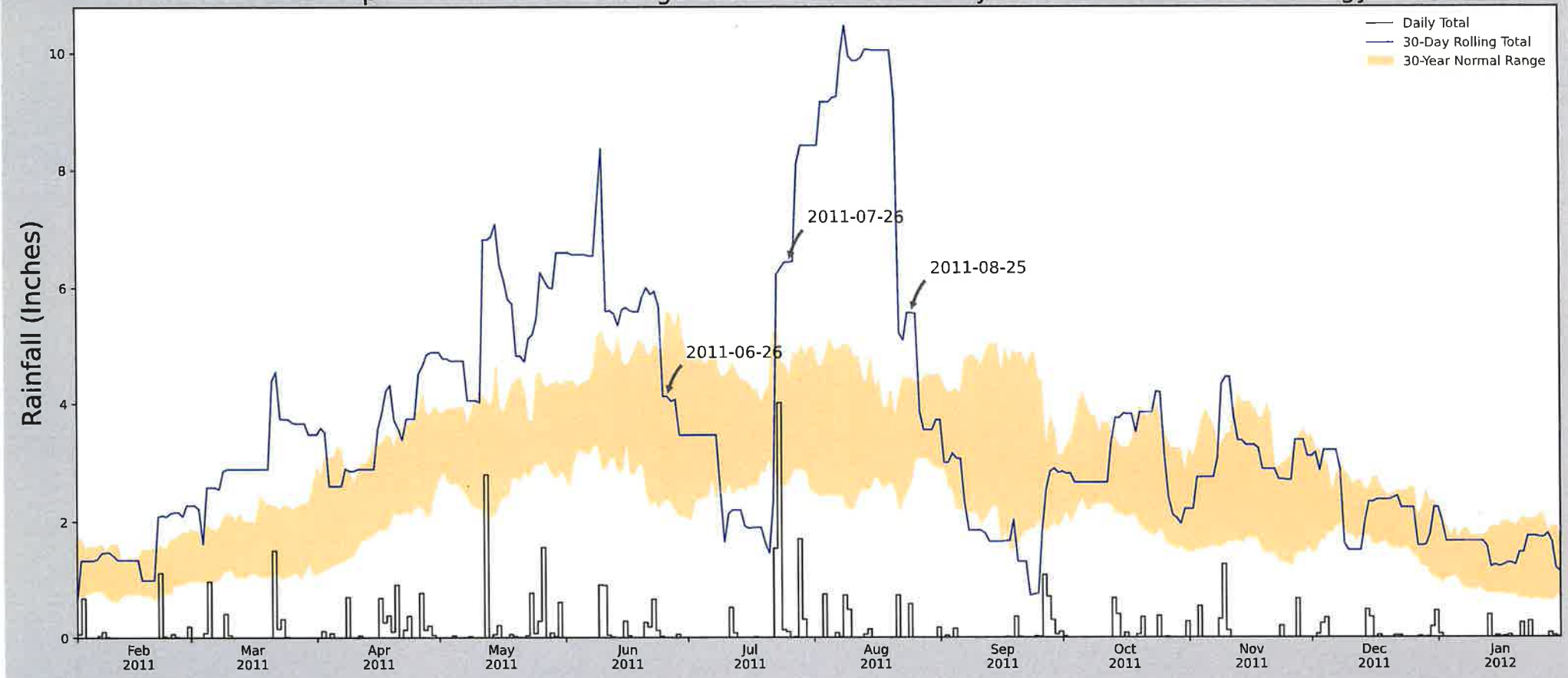
Client/Project
Nexamp, Inc.
Loon Lake Solar Project
Wetland Delineation Report

193806152

Title
Historical Aerial Review (6/23/2022 Aerial Imagery)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: NAIP

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2011-08-25
Elevation (ft)	788.826
Drought Index (PDSI)	Moderate wetness
WebWIMP H_2O Balance	Dry Season

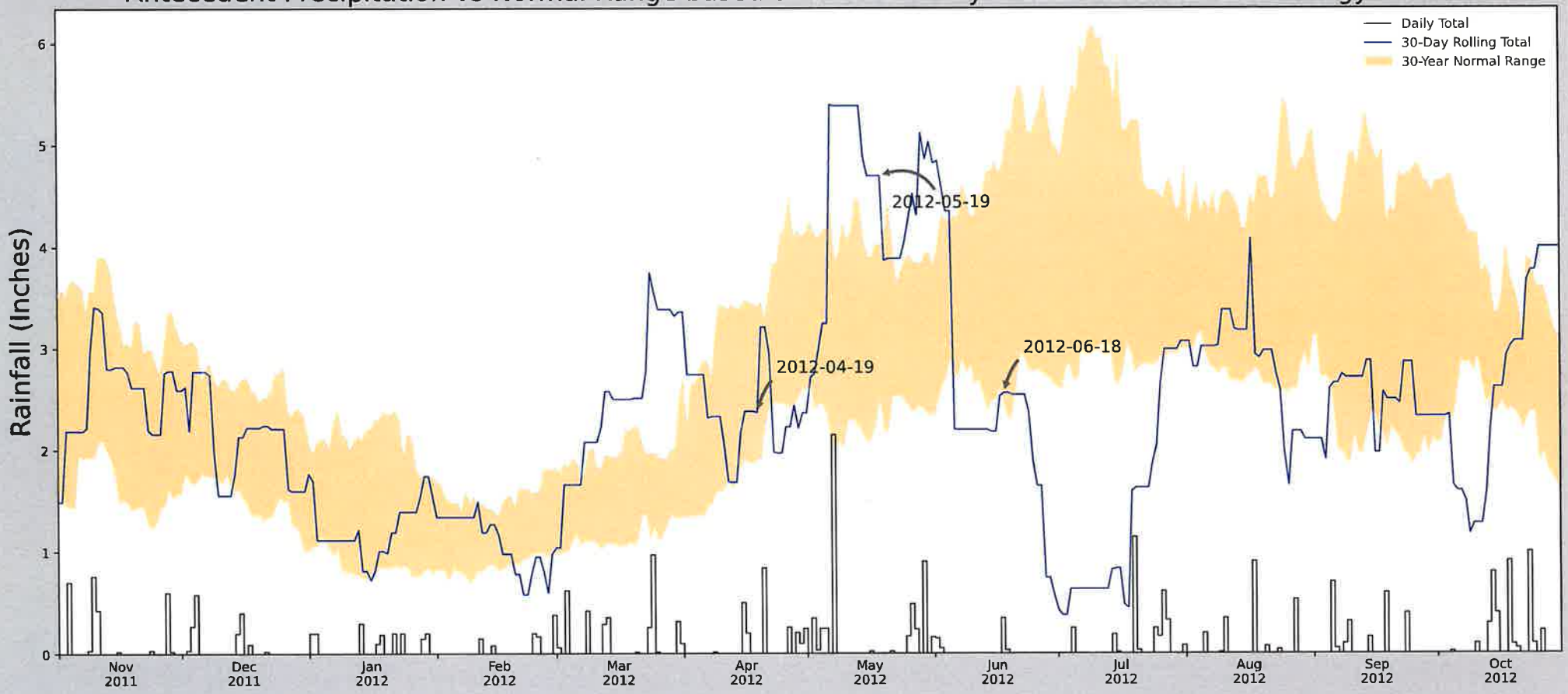
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2011-08-25	2.681496	4.431103	5.574803	Wet	3	3	9
2011-07-26	2.693307	4.457874	6.440945	Wet	3	2	6
2011-06-26	2.377165	5.601181	4.122047	Normal	2	1	2
Result							Wetter than Normal - 17

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
MC HENRY -WG STRATTON L&D	42.3092, -88.2533	735.892	13.406	52.934	6.742	9588	90
CRYSTAL LAKE 4NW	42.2611, -88.3953	939.961	7.983	204.069	5.221	692	0
MUNDELEIN 4 WSW	42.2553, -88.0775	839.895	9.728	104.003	5.389	3	0
LIBERTYVILLE 4 NNW	42.3097, -87.9908	720.144	13.413	15.748	6.247	1	0
ANTIOCH	42.4811, -88.0994	750.0	14.239	14.108	6.608	743	0
LAKE VILLA 2NE	42.4308, -88.0594	839.895	12.983	104.003	7.193	325	0
ELGIN	42.0628, -88.2861	763.123	17.107	27.231	8.164	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2012-06-18
Elevation (ft)	788.826
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Dry Season

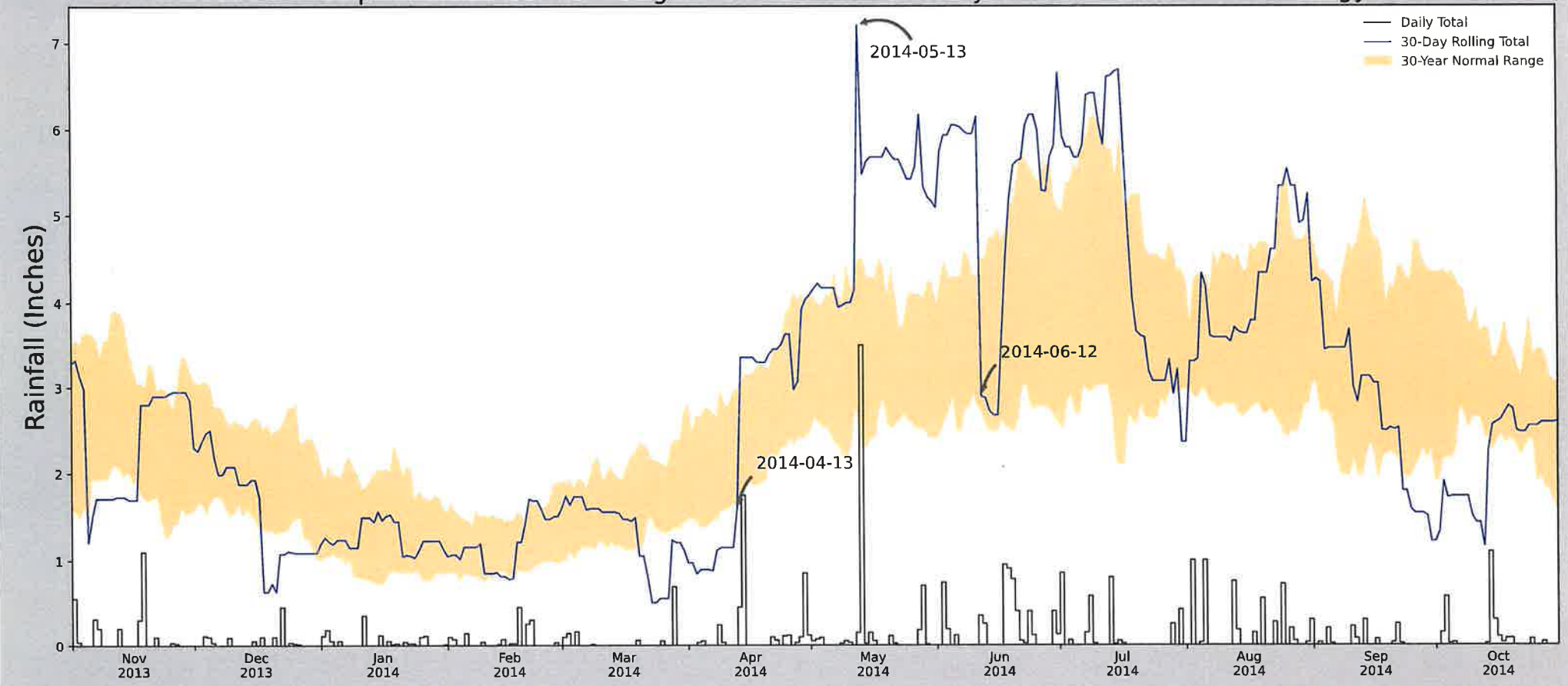
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2012-06-18	2.494488	4.81811	2.562992	Normal	2	3	6
2012-05-19	2.534252	4.015354	4.700788	Wet	3	2	6
2012-04-19	1.903543	3.402756	2.370079	Normal	2	1	2
Result							Normal Conditions - 14

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAUKESHA WWTP	42.9997, -88.2536	791.011	38.225	2.185	17.285	9757	90
WAUKESHA 2.1 SSW	42.9847, -88.2531	816.929	1.037	25.918	0.494	2	0
HALES CORNERS/WHITNALL PARK/BO	42.9375, -88.0297	773.95	12.108	17.061	5.655	33	0
WEST ALLIS	43.0175, -88.0017	723.097	12.786	67.914	6.622	87	0
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	17.92	124.016	10.286	1473	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2014-06-12
Elevation (ft)	788.826
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Dry Season

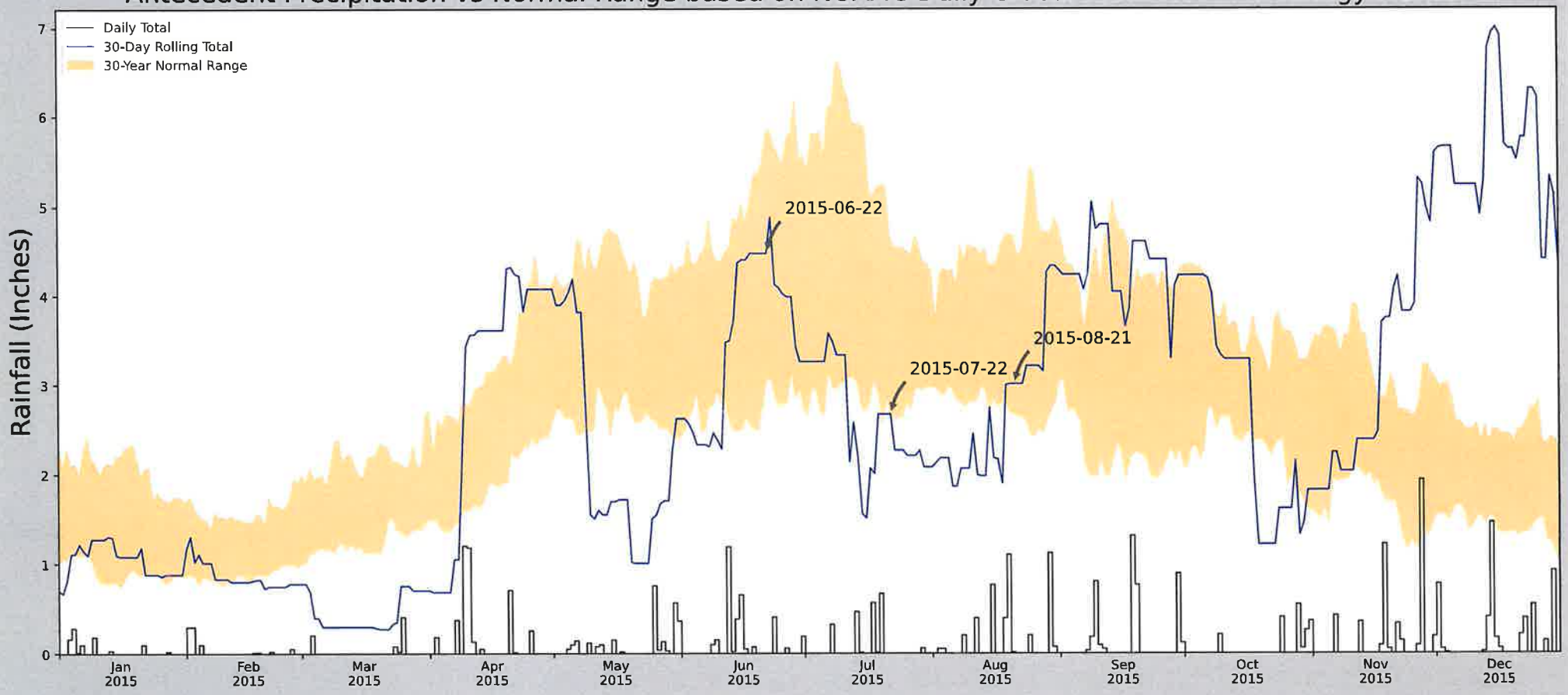
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2014-06-12	2.72441	4.503543	2.893701	Normal	2	3	6
2014-05-13	2.634252	4.505512	7.200788	Wet	3	2	6
2014-04-13	1.614567	2.981102	1.602362	Dry	1	1	1
Result							Normal Conditions - 13

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAUKESHA WWTP	42.9997, -88.2536	791.011	38.225	2.185	17.285	9789	90
WAUKESHA 2.1 SSW	42.9847, -88.2531	816.929	1.037	25.918	0.494	2	0
HALES CORNERS/WHITNALL PARK/BO	42.9375, -88.0297	773.95	12.108	17.061	5.655	33	0
WEST ALLIS	43.0175, -88.0017	723.097	12.786	67.914	6.622	56	0
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	17.92	124.016	10.286	1473	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2015-08-21
Elevation (ft)	788.826
Drought Index (PDSI)	Moderate wetness
WebWIMP H_2O Balance	Dry Season

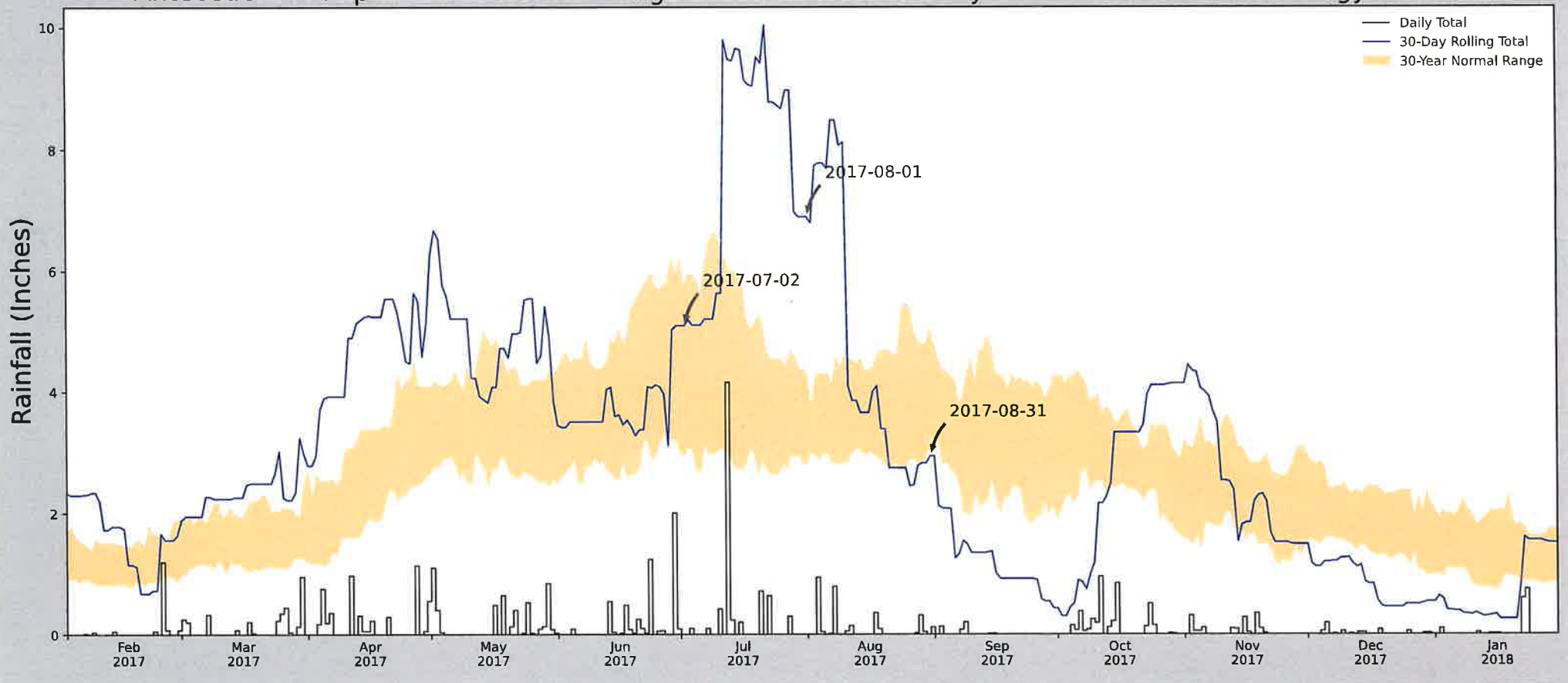
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2015-08-21	2.669291	4.690158	3.011811	Normal	2	3	6
2015-07-22	2.645276	4.672441	2.673228	Normal	2	2	4
2015-06-22	3.053543	5.839764	4.480315	Normal	2	1	2
Result							Normal Conditions - 12

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAUKESHA WWTP	42.9997, -88.2536	791.011	38.225	2.185	17.285	9791	90
WAUKESHA 2.1 SSW	42.9847, -88.2531	816.929	1.037	25.918	0.494	2	0
HALES CORNERS/WHITNALL PARK/BO	42.9375, -88.0297	773.95	12.108	17.061	5.655	33	0
WEST ALLIS	43.0175, -88.0017	723.097	12.786	67.914	6.622	54	0
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	17.92	124.016	10.286	1473	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2017-08-31
Elevation (ft)	788.826
Drought Index (PDSI)	Severe wetness
WebWIMP H_2O Balance	Dry Season

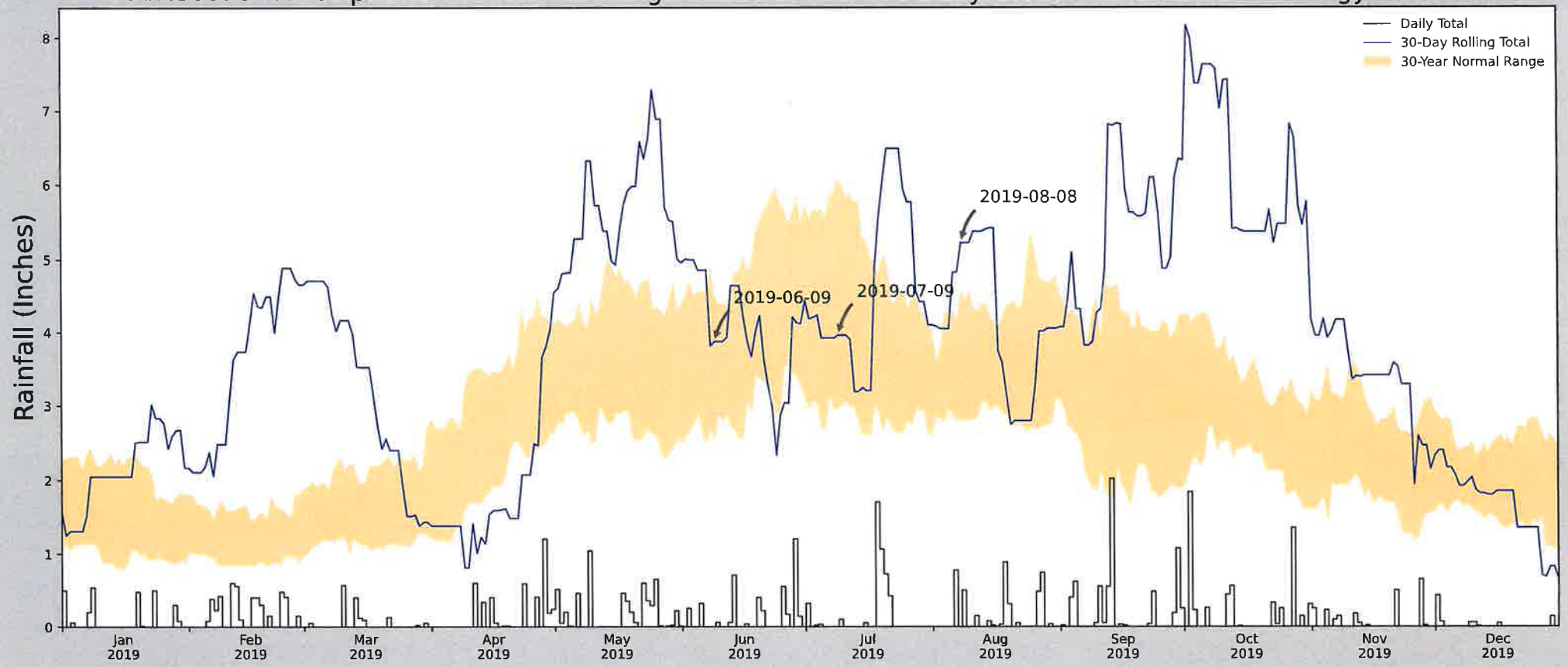
30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2017-08-31	3.225197	5.064961	2.937008	Dry	1	3	3
2017-08-01	2.801575	4.258662	6.88189	Wet	3	2	6
2017-07-02	2.944882	5.703937	5.102362	Normal	2	1	2
Result							Normal Conditions - 11

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAUKESHA WWTP	42.9997, -88.2536	791.011	38.225	2.185	17.285	9768	90
WAUKESHA 2.1 SSW	42.9847, -88.2531	816.929	1.037	25.918	0.494	18	0
WAUKESHA 7.2 SSW	42.9104, -88.2695	942.913	6.222	151.902	3.745	4	0
NEW BERLIN 0.6 ESE	42.9681, -88.1185	926.837	7.169	135.826	4.2	3	0
MUSKEGO 1.0 W	42.8918, -88.1423	784.121	9.342	6.89	4.268	2	0
HALES CORNERS/WHITNALL PARK/BO	42.9375, -88.0297	773.95	12.108	17.061	5.655	33	0
WEST ALLIS	43.0175, -88.0017	723.097	12.786	67.914	6.622	52	0
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	17.92	124.016	10.286	1473	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2019-08-08
Elevation (ft)	788.826
Drought Index (PDSI)	Severe wetness
WebWIMP H_2O Balance	Dry Season

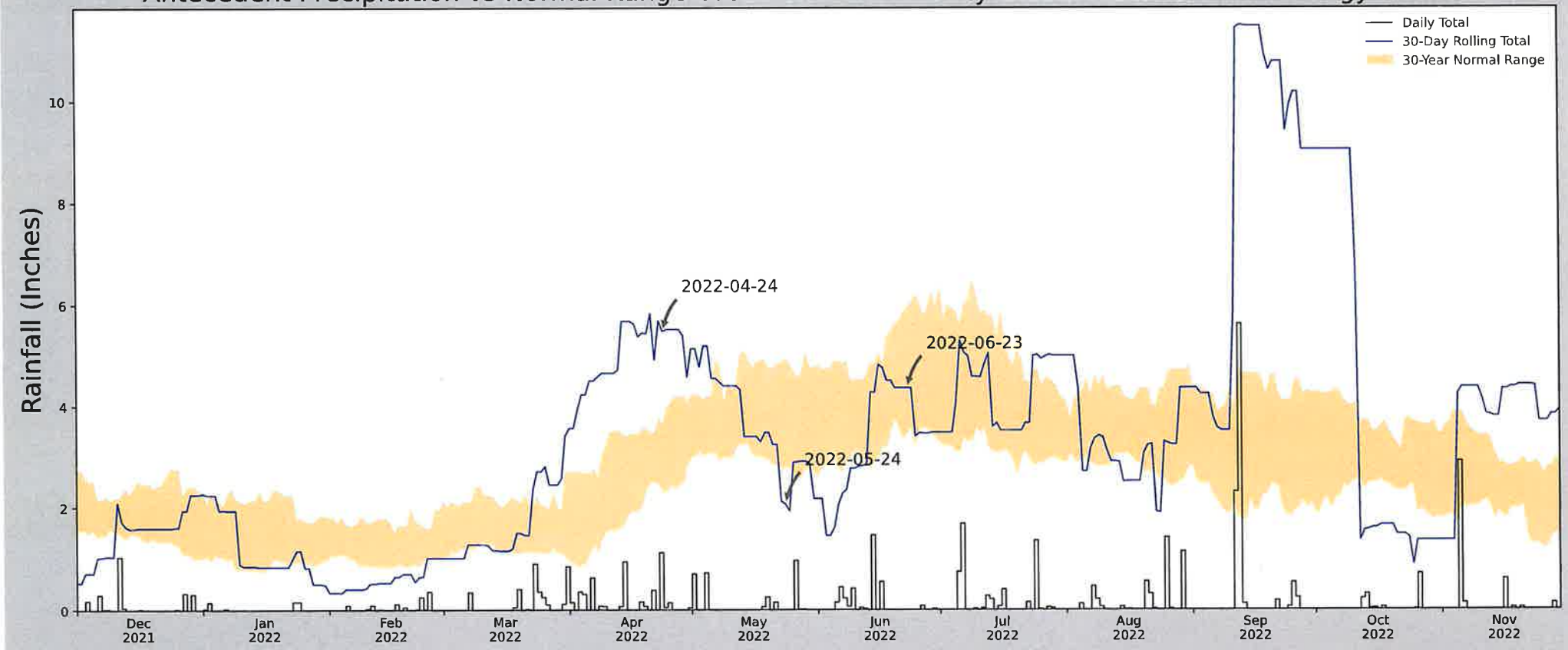
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2019-08-08	2.795669	4.58189	5.22441	Wet	3	3	9
2019-07-09	2.953543	6.068898	3.96063	Normal	2	2	4
2019-06-09	2.550394	4.503543	3.874016	Normal	2	1	2
Result							Wetter than Normal - 15

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAUKESHA WWTP	42.9997, -88.2536	791.011	38.225	2.185	17.285	9800	90
WAUKESHA 2.1 SSW	42.9847, -88.2531	816.929	1.037	25.918	0.494	20	0
NEW BERLIN 1.9 WNW	42.9838, -88.1632	970.144	4.699	179.133	2.956	3	0
WAUKESHA 7.2 SSW	42.9104, -88.2695	942.913	6.222	151.902	3.745	4	0
NEW BERLIN 0.6 ESE	42.9681, -88.1185	926.837	7.169	135.826	4.2	3	0
MUSKEGO 1.0 W	42.8918, -88.1423	784.121	9.342	6.89	4.268	2	0
HALES CORNERS/WHITNALL PARK/BO	42.9375, -88.0297	773.95	12.108	17.061	5.655	33	0
WEST ALLIS	43.0175, -88.0017	723.097	12.786	67.914	6.622	15	0
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	17.92	124.016	10.286	1473	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.460, -88.088
Observation Date	2022-06-23
Elevation (ft)	788.826
Drought Index (PDSI)	Normal
WebWIMP H_2O Balance	Dry Season

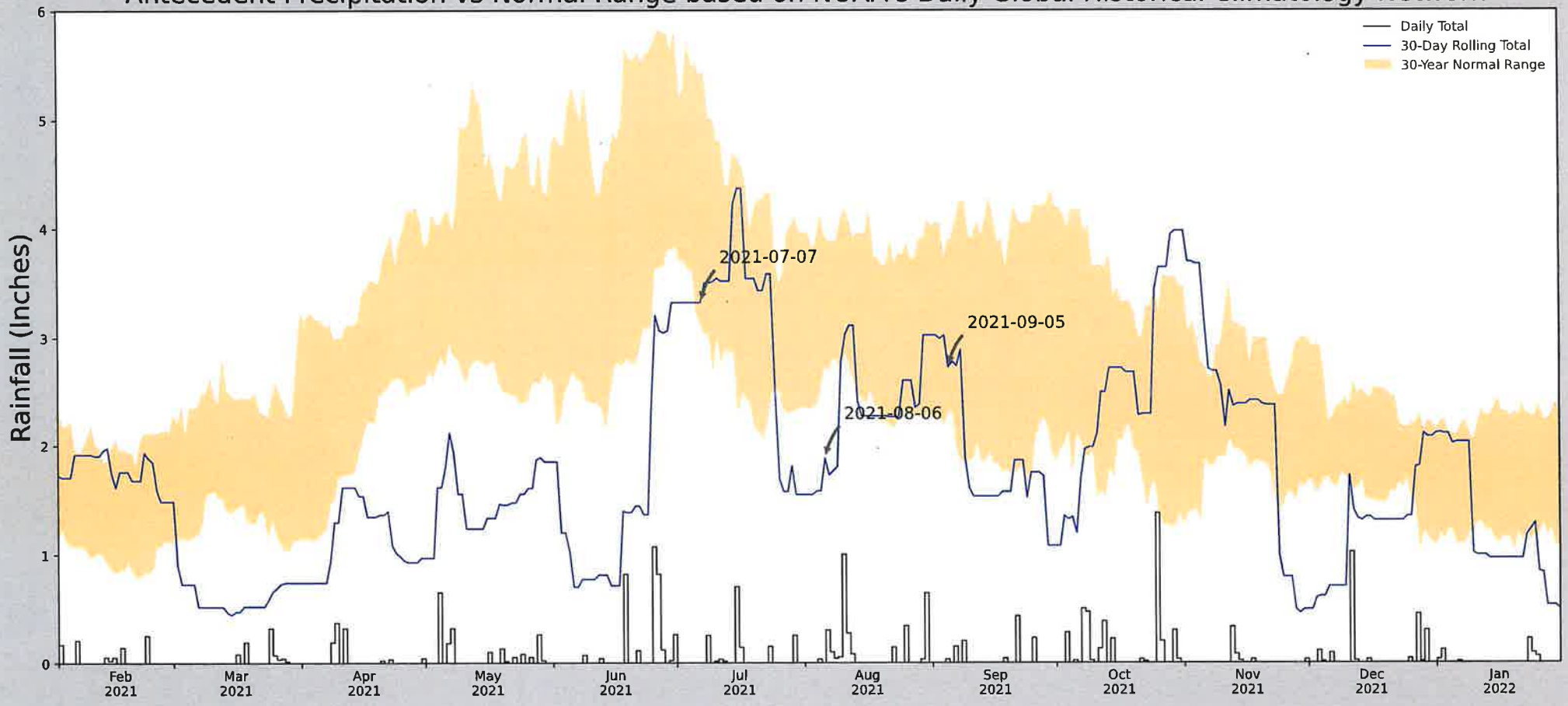
30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-06-23	3.461024	5.934252	4.362205	Normal	2	3	6
2022-05-24	2.798032	4.949213	2.062992	Dry	1	2	2
2022-04-24	2.31063	3.625591	5.480315	Wet	3	1	3
Result							Normal Conditions - 11

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WAUKESHA WWTP	42.9997, -88.2536	791.011	38.225	2.185	17.285	10805	90
WAUKESHA 2.1 SSW	42.9847, -88.2531	816.929	1.037	25.918	0.494	20	0
WAUKESHA 1.7 ESE	43.004, -88.2069	943.898	2.378	152.887	1.434	1	0
WAUKESHA 1.8 ENE	43.026, -88.2085	886.155	2.914	95.144	1.589	2	0
NEW BERLIN 1.9 WNW	42.9838, -88.1632	970.144	4.699	179.133	2.956	13	0
WAUKESHA 7.2 SSW	42.9104, -88.2695	942.913	6.222	151.902	3.745	4	0
NEW BERLIN 0.6 ESE	42.9681, -88.1185	926.837	7.169	135.826	4.2	3	0
MUSKEGO 1.0 W	42.8918, -88.1423	784.121	9.342	6.89	4.268	2	0
HALES CORNERS/WHITNALL PARK/BO	42.9375, -88.0297	773.95	12.108	17.061	5.655	33	0
WEST ALLIS	43.0175, -88.0017	723.097	12.786	67.914	6.622	15	0
MILWAUKEE MITCHELL AP	42.955, -87.9044	666.995	17.92	124.016	10.286	455	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	42.497143, -88.096869
Observation Date	2021-09-05
Elevation (ft)	815.655
Drought Index (PDSI)	Moderate drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2021-09-05	2.306693	3.885039	2.72441	Normal	2	3	6
2021-08-06	2.740945	3.927559	1.88189	Dry	1	2	2
2021-07-07	3.116536	5.400788	3.326772	Normal	2	1	2
Result							Normal Conditions - 10

Figure and tables made by the **Antecedent Precipitation Tool** Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
BURLINGTON WWTP	42.6508, -88.2544	776.903	13.303	38.752	6.502	11216	90
ROCHESTER WWTP	42.7264, -88.2267	775.919	5.41	0.984	2.44	2	0
PELL LAKE WWTP	42.5322, -88.3328	848.097	9.113	71.194	4.75	1	0
LAKE GENEVA WWTP	42.6006, -88.4253	846.129	9.355	69.226	4.857	134	0

McHENRY-LAKE COUNTY SOIL & WATER CONSERVATION DISTRICT

NATURAL RESOURCES INFORMATION REPORT

23-065-4525

August 25, 2023

This report has been prepared for:
Loon Lake Solar, LLC
c/o Matt Walsh

Contact Person:
Matthew Clementi

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

EXECUTIVE SUMMARY OF NRI REPORT #23-065-4525

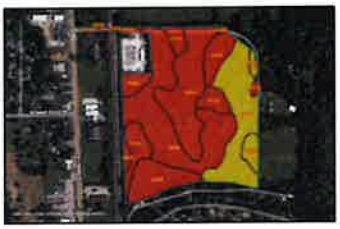
It is the opinion of the McHenry-Lake County Soil and Water Conservation District Board of Directors that this report as summarized on this page is pertinent to the requested zoning change.

Groundwater Contamination Potential:

Nitrate Leachability: Maps indicate the parcel is within an area that has very limited and limited sensitivity to nitrate leaching.

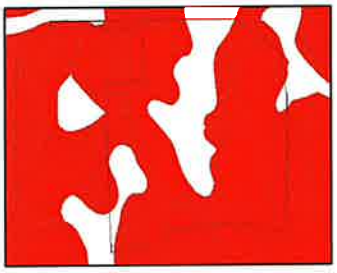
Pesticide Leachability: Maps indicate the parcel is within an area that has very limited sensitivity to pesticide leaching.

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

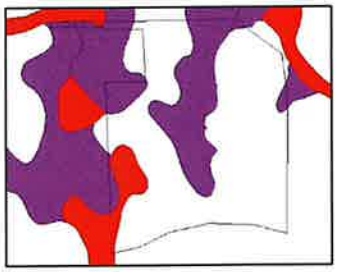


Ground Based Solar Arrays
The NRCS Soils Survey indicates 30.2 acres or 77.2% of the parcel has a very severe limitation for Soil Anchored Solar Arrays. The reason for the ratings can be found on starting on page 18 of the report.

Erosion Ratings
The NRCS Soils Survey indicates there are no highly erodible soils on the parcel.



Prime Farmland Soils
The Natural Resources Conservation Service (NRCS) Soil Survey indicates that approximately 29.74 acres or 43.19% of the parcel are composed of prime farmland soils (identified in red).



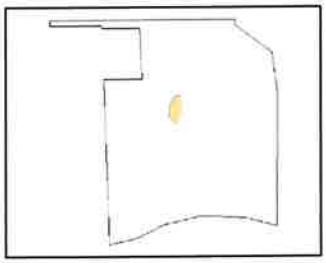
Hydric Soils
The NRCS Soil Survey indicates 1.97 acres or 4.8% of the parcel are comprised of hydric soils (identified in red). Additionally, 9.52 acres or 23.17% of the parcel contains soils with hydric inclusions (identified in purple).

Floodplain Information:

The FEMA Flood Insurance Rate Map
Indicates 100-year floodplain is present on 0% of this parcel.

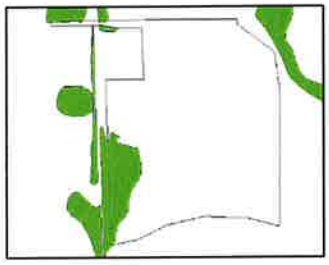
U.S. Geological Survey (USGS) Flood of Record Map (Hydrologic Atlas)
The Flood of Record Map for this area indicates there has been no previous flooding during the 1960 flood of record on the parcel.

Wetland Information:



USDA-NRCS Wetland Inventory
The NRCS Wetlands Inventory identifies 0.33 acres of farmed wetlands on the parcel (identified in orange).

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



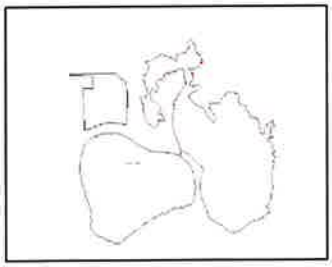
Lake County Wetland Inventory
The Lake County Wetland Inventory identifies 2.67 acres of the parcel as wetland (identified in green).

Information provided by the applicant, indicate a wetland delineation was completed on the parcel, by Stantec, dated June 27, 2023. The wetland delineation identifies eight wetland areas scattered throughout the parcel. As we were not provided development plans, it is unclear whether these wetlands will be impacted. Our office recommends avoiding wetland areas and providing buffers around these resources to ensure their quality and functionality.

Drainage Tile and Drainage Districts:
A review of maps identifying known field tile locations in Lake County did not indicate the presence of drainage tiles on the parcel. However, as these maps are known to contain errors and omissions, there is still the possibility that field tiles may be present. A field tile survey is recommended for the parcel if this has not already been done, since the area is currently under agricultural row crop production and contains hydric soils. Undetected field tiles can cause flooding and other hydrologic problems in the future.

Cultural Resources: None identified

Woodlands: The parcel contains mature trees especially within the central portion of the parcel and around the large wetland complex.



Natural Areas: Office maps indicate Illinois Natural Areas Inventory Site – Loon Lake is south and east of the parcel (identified in red).

ADDITIONAL CONCERNS

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.

If not already completed, an Agriculture Mitigation Agreement with the Illinois Department of Agriculture should be 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.

McHENRY-LAKE COUNTY SOIL AND WATER CONSERVATION DISTRICT
NATURAL RESOURCE INFORMATION REPORT (NRI)

NRI Report Number	23-065-4525
Applicant's Name	Loon Lake Solar, LLC c/o Matt Walsh
Size of Parcel	38.97 acres
Zoning Change	Estate/M-1 Conditional Use for Solar Facility
Parcel Index Number(s)	02-17-400-027, 02-17-400-036, 02-20-200-017
Common Location	Undefined
Contact Person	Matthew Clementi

Copies of this report or notification of the proposed land-use change were provided to:	***yes***	***no***
The Applicant		x
The Applicant's Legal Representation/Consultant	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.

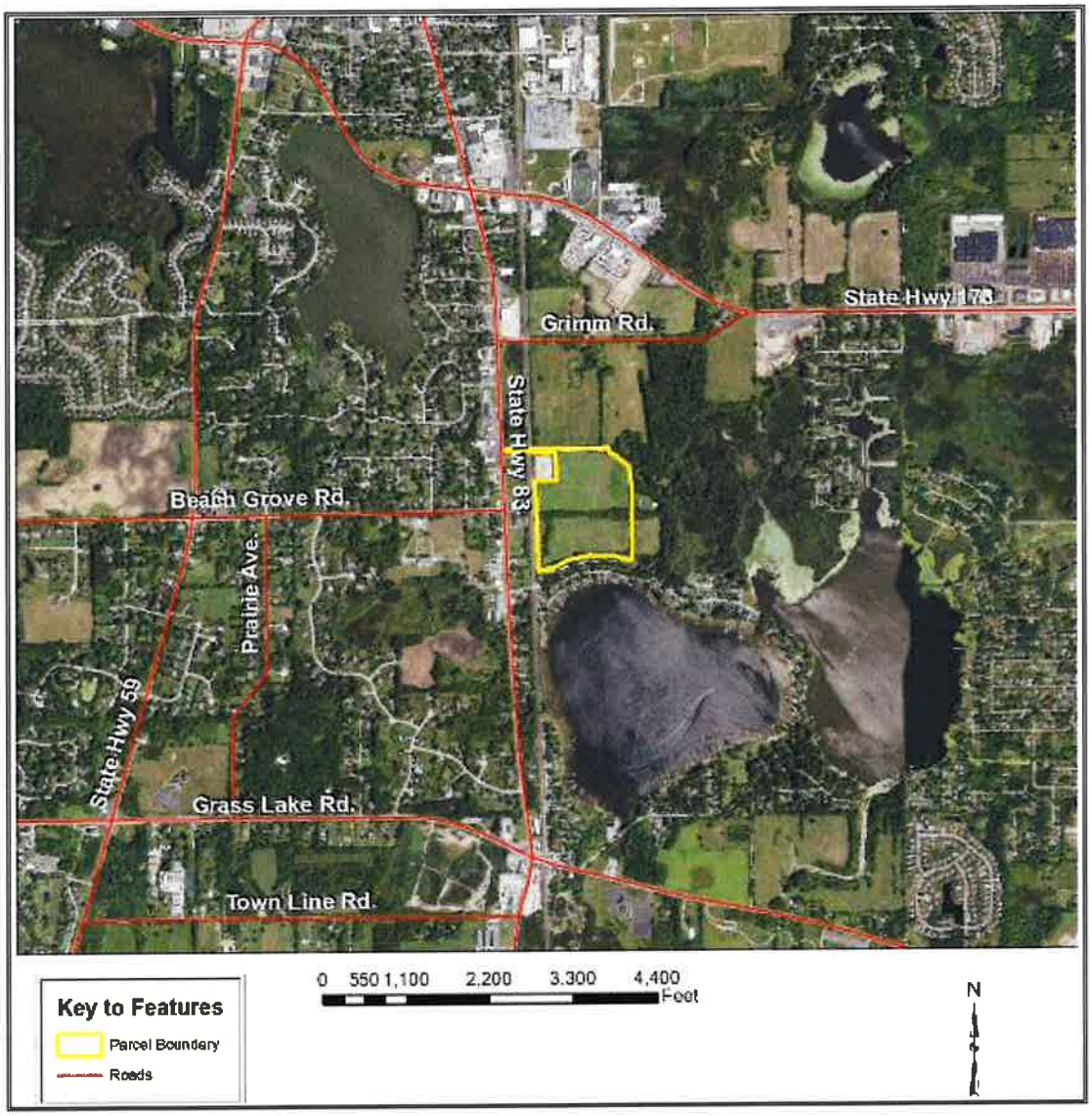
The conclusions of this report in no way indicate that a certain land use is not possible, but it should alert the reader to possible problems that may occur if the capabilities of the land are ignored. Any questions on the technical data supplied in this report or if anyone feels that they would like 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) 338-0099 ext. 3
www.mchenryswcd.org
E-mail: Spring.Duffey@il.nacdnet.net

PARCEL LOCATION

Location Map for Natural Resources Information Report # 23-065-4525

In the Southeast Quarter of Section 17 and the Northeast Quarter of Section 20, Township 46 North, Range 10 East, on 38.97 acres. This parcel is located east of the intersection of State Highway 83 and Beach Grove Road, Lake 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.

Those sites deemed to be significant and eligible for listing on the National Register of Historical Places are referred to as "historic properties." These may be prehistoric (before written history) or from the historic period, which in Illinois is after 1673. Anything older than 50 years needs to be evaluated for historic significance.

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 over 100 years old.

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.

Historic Preservation Legislation: The National Historic Preservation Act of 1966 (NHPA Section 106) requires all Federal Agencies' "undertakings" to "take into account" their effect on historic properties. As of January 1, 1990, the State Agency Historic Resources Preservation Act (Public Act 86-707) requires the same for all private or public undertakings involving state agencies. An "undertaking" is defined to cover a wide range of Federal or State permitting, funding, and licensing activities. It is the responsibility of Federal/State Agencies to ensure the protection of historic resources and the State Historic Preservation Office (SHPO) regulates this effort.

The Applicant should contact the Archaeology Section, Preservation Services Division, Illinois Historic Preservation Agency, for information about compliance with Federal and State regulations at http://www.stae.il.us/hpa/.

The resource maps do not identify known cultural resources on 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)

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 midwestern 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

---

[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

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 Illinois Natural Areas Inventory Site – Loon Lake is south and east of the parcel.


State Hwy 173
Grimm Rd.
State Hwy 83
Beach Grove Rd.
Loon Lake
Grass Lake Rd.
Key to Features
Parcel Boundary
Roads
Illinois Natural Areas Inventory
0 360 720 1,440 2,160 2,880
Feet
N

WOODLANDS

Existing mature trees should be preserved whenever possible. Woodlands provide a large number of benefits such as wildlife habitat, erosion control, air and water quality improvements, as well as aesthetic values. Construction activities can indirectly destroy trees. Oak trees are particularly susceptible to long term, permanent damage caused by construction activities and require special consideration. It is also recommended that invasive non-native species be removed whenever possible. The petitioner is advised to consult the County or Municipal tree ordinance regarding the specific requirements for tree removal and planting.

Native woodlands are no longer a common occurrence throughout much of Lake 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.

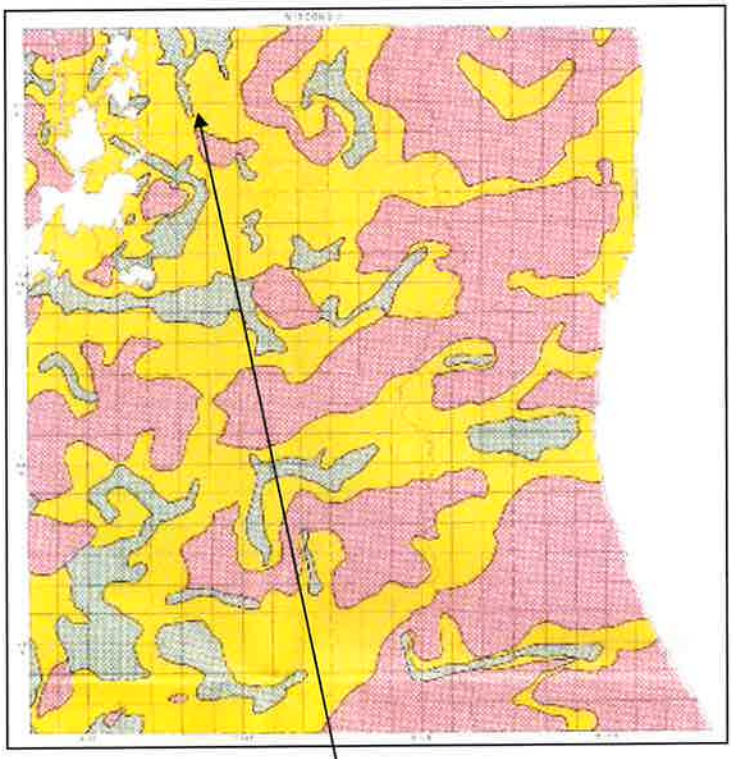
Tree damage resulting from construction activities may not be apparent for a number of years. While it is recognized that some tree loss is unavoidable, this should be minimized to the extent possible. It is highly recommended that trees lost to development activity be replaced by younger specimens of 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.

The groundwater in thin sand and gravel deposits is not commonly tapped for water resources; 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. The fine-grained materials (10-50 feet thick, offer moderate protection for underlying aquifers from waste spreading or septic systems. Burial Aquifers are aquifers overlain by 10 feet or more of fine-grained deposits.



Section 17 & 20 that the PIQ lies in.

Burial Sand and Gravel Aquifers

Key:

Green – Good to excellent aquifers, 50 to more than 100 ft. of sand & gravel reported

Yellow – Fair to poor aquifers, 15-50 ft. of sand and gravel reported.

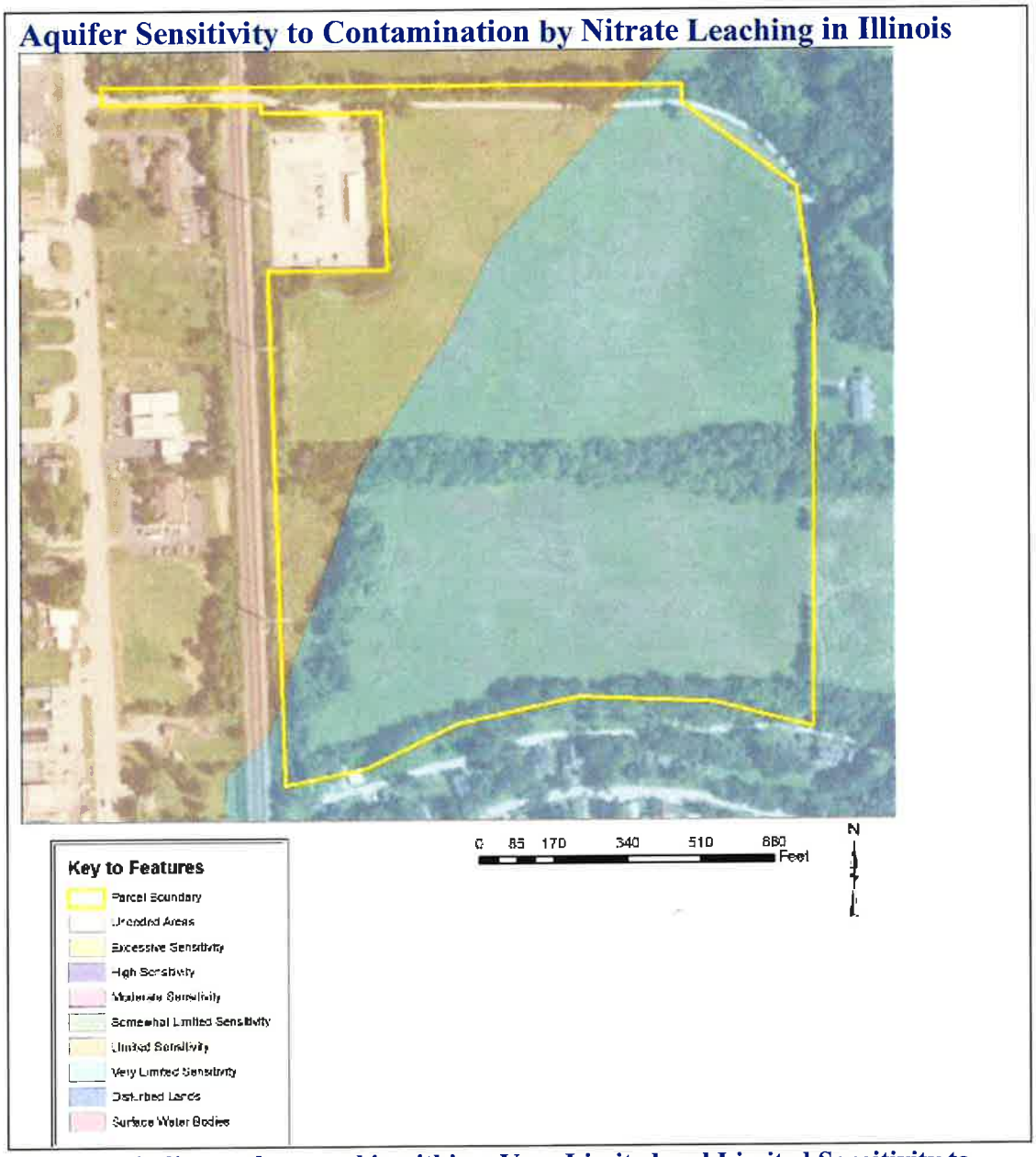
Pink – Poor aquifers and non-aquifers, less than 15 ft. of sand and gravel reported.

Aquifer Sensitivity to Contamination by Nitrate and Pesticide Leaching

(Information from Illinois State Geologic Survey Environmental Geology Report 148)

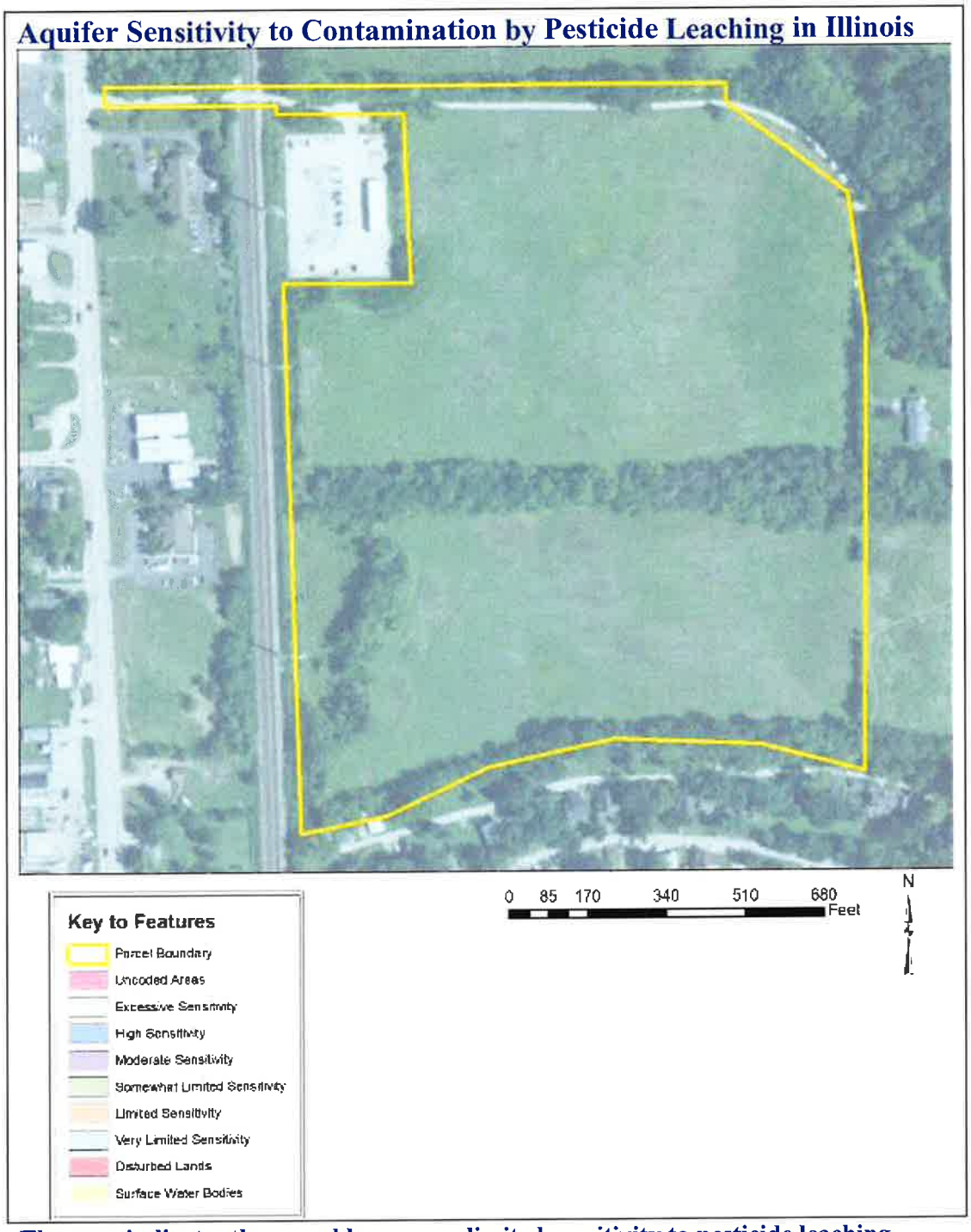
Purpose:

This data set was designed for statewide evaluation of agrichemical leaching characteristics and associated aquifer sensitivity to contamination. It was created to classify soils and aquifer settings according to predictions of leaching potential. The classifications have not been validated by the results of water quality sampling. Accordingly, the reliability of these aquifer sensitivity ratings as predictors of water quality has not been evaluated.



The map indicates the parcel is within a Very Limited and Limited Sensitivity to Nitrate Leaching area.

Aquifer Sensitivity to Contamination by Pesticide Leaching in Illinois



The map indicates the parcel has a very limited sensitivity to pesticide leaching.

SOILS INFORMATION

Importance of Soils Information

Soils information comes from Natural Resources Conservation Service Soil Maps and Descriptions for Lake 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.

Natural Resources Conservation Service Soil Survey Map of Area

Soil Map Unit Descriptions

Symbol	Description	Acres	Percent
146A	Elliott silt loam, 0 to 2 percent slopes	0.54	1.37%
153A	Pella silty clay loam, 0 to 2 percent slopes	1.91	4.89%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	0.06	0.15%
298A	Beecher silt loam, 0 to 2 percent slopes	7.18	18.37%
298B	Beecher silt loam, 2 to 4 percent slopes	3.45	8.81%
442A	Mundelein silt loam, 0 to 2 percent slopes	0.11	0.28%
531B	Markham silt loam, 2 to 4 percent slopes	2.09	5.34%
697A	Wauconda silt loam, 0 to 2 percent slopes	0.22	0.57%
706B	Boyer sandy loam, 2 to 4 percent slopes	7.60	19.44%
706C	Boyer sandy loam, 4 to 6 percent slopes	1.24	3.17%
840B	Zurich and Ozaukee silt loams, 2 to 4 percent slopes	1.88	4.81%
989A	Mundelein and Elliott silt loams, 0 to 2 percent slopes	1.47	3.75%
989B	Mundelein and Elliott silt loams, 2 to 4 percent slopes	11.36	29.05%

*SOURCE: National Cooperative Soil Survey

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.

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).

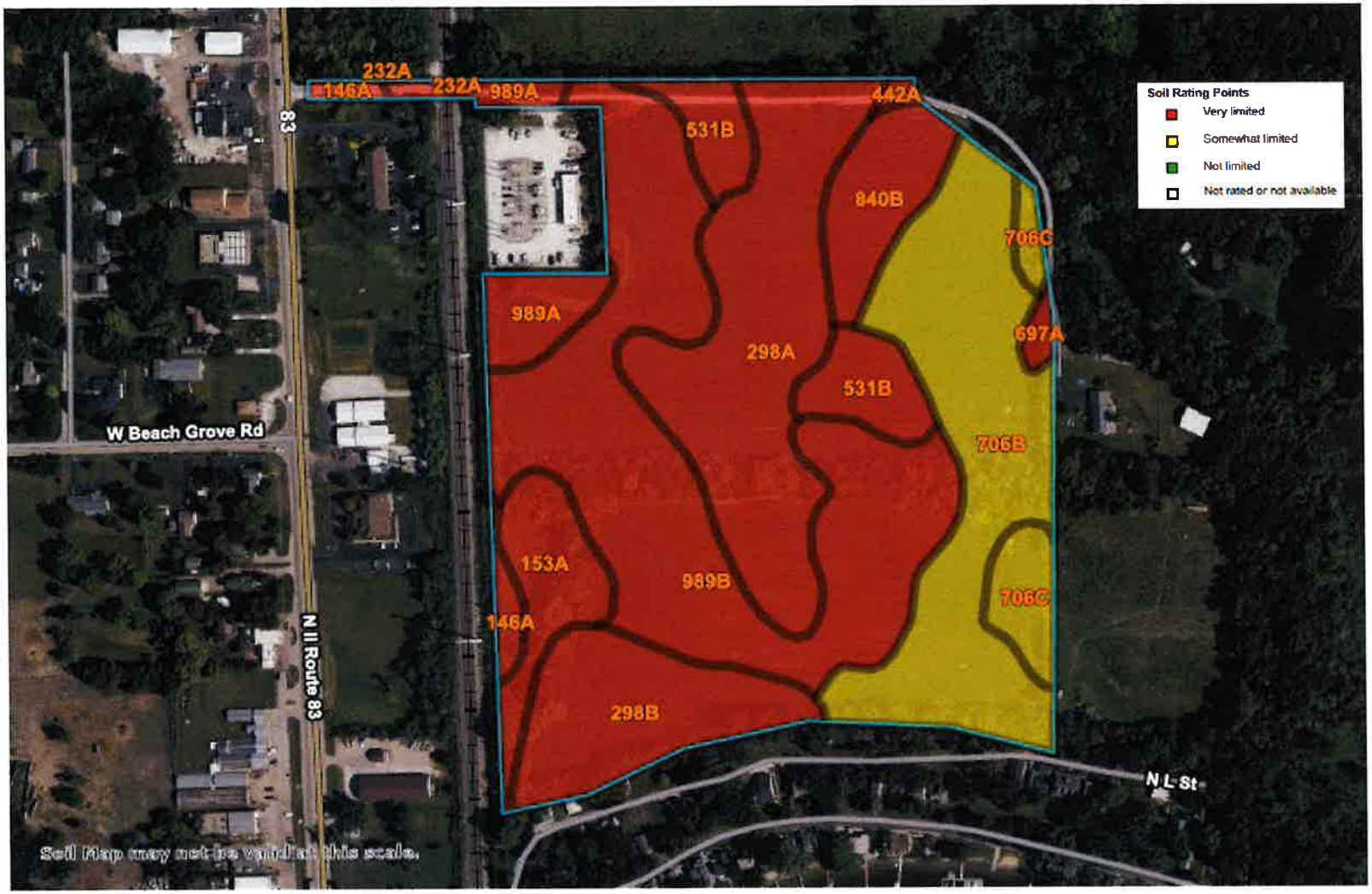
The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit 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.


232A
146A
232A
989A
442A
531B
840B
706C
989A
697A
298A
531B
706B
153A
989B
706C
146A
298B
83
W Beach Grove Rd
N Il Route 83
N L St
Soil Rating Points
Very limited
Somewhat limited
Not limited
Not rated or not available
Soil Map may not be valid at this scale.

Ground-based Solar Arrays, Soil-penetrating Anchor Systems

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
148A	Elliott silt loam, 0 to 2 percent slopes	Very limited	Elliott (94%)	Low strength (1.00)	0.5	1.3%
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
			Ashkum, drained (4%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
			Orthents, clayey (1%)	Shrink-swell (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
153A	Pella silty clay loam, 0 to 2 percent slopes	Very limited	Pella, drained (96%)	Ponding (1.00)	1.9	4.8%
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (0.80)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Steel corrosion (0.75)		
			Harpster, drained (3%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
232A	Ashkum silty clay loam, 0 to 2 percent slopes	Very limited	Ashkum, drained (82%)	Ponding (1.00)	0.0	0.1%
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
			Peotone, drained (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
			Orthents, clayey (2%)	Shrink-swell (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
298A	Beecher silt loam, 0 to 2 percent slopes	Very limited	Beecher (90%)	Frost action (1.00)	7.2	18.3%
				Low strength (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Depth to saturated zone (0.99)		
				Steel corrosion (0.75)		
				Hillslope position (0.25)		
			Ashkum, drained (6%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
			Orthents, clayey (2%)	Shrink-swell (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
298B	Beecher silt loam, 2 to 4 percent slopes	Very limited	Beecher (90%)	Frost action (1.00)	3.5	9.0%
				Low strength (1.00)		
				Depth to saturated zone (0.99)		
				Steel corrosion (0.75)		
				Hillslope position (0.13)		
			Ashkum, drained (6%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Low strength (1.00)		
			Orthents, clayey (2%)	Shrink-swell (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
442A	Mundelein silt loam, 0 to 2 percent slopes	Very limited	Mundelein (92%)	Frost action (1.00)	0.1	0.3%
				Low strength (0.83)		
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Hillslope position (0.25)		
			Drummer (4%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
			Pella (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (0.98)		
				Steel corrosion (0.75)		
531B	Markham silt loam, 2 to 4 percent slopes	Very limited	Markham (90%)	Low strength (1.00)	2.1	5.3%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
				Slope shape across (0.20)		
			Ashkum, drained (6%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
			Orthents, clayey (2%)	Shrink-swell (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
697A	Wauconda silt loam, 0 to 2 percent slopes	Very limited	Wauconda (92%)	Frost action (1.00)	0.2	0.6%
				Depth to saturated zone (0.94)		
				Steel corrosion (0.75)		
				Low strength (0.61)		
				Hillslope position (0.25)		
			Drummer (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Low strength (1.00)		
				Steel corrosion (0.75)		
			Pella (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (0.98)		
				Steel corrosion (0.75)		
706B	Boyer sandy loam, 2 to 4 percent slopes	Somewhat limited	Boyer (90%)	Steel corrosion (0.75)	7.7	18.6%
				Frost action (0.50)		
				Hillslope position (0.13)		
706C	Boyer sandy loam, 4 to 8 percent slopes	Somewhat limited	Boyer (90%)	Steel corrosion (0.75)	1.2	3.2%
				Frost action (0.50)		
				Hillslope position (0.13)		
840B	Zurich and Ozaukee silt loams, 2 to 4 percent slopes	Very limited	Zurich (46%)	Frost action (1.00)	1.9	4.8%
				Steel corrosion (0.75)		
				Low strength (0.66)		
				Hillslope position (0.25)		
				Shrink-swell (0.03)		
			Ozaukee (45%)	Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Shrink-swell (0.47)		
				Hillslope position (0.25)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
989A	Mundelein and Elliott silt loams, 0 to 2 percent slopes	Very limited	Mundelein (46%)	Frost action (1.00)	1.4	3.7%
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Low strength (0.68)		
				Hillslope position (0.25)		
989B	Mundelein and Elliott silt loams, 2 to 4 percent slopes	Very limited	Mundelein (46%)	Frost action (1.00)	11.3	29.0%
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Low strength (0.69)		
				Hillslope position (0.13)		
Totals for Area of Interest					39.1	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	30.2	77.2%
Somewhat limited	8.9	22.8%
Totals for Area of Interest	39.1	100.0%

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.

Under the Watershed Development Ordinance of the Lake County Stormwater Management Commission, soil erosion and sedimentation control measures are required for any land disturbance. The following has to be met:

1. Any soil disturbance must be constructed in a way that will minimize any erosion.
2. Adjoining properties and channels need to be protected from erosion and sedimentation.
3. Soil erosion and sedimentation control measures need to be constructed prior to hydrologic disturbance.
4. The disturbed areas need to be protected with temporary (needs to be removed within 30 days after final site stabilization is achieved) or permanent measures within fourteen days following the end of hydrologic disturbance or redisturbance.
5. Land disturbance activities in streams need to be avoided.
6. Soil erosion and sedimentation control measures need to be appropriate in regard to the amount of tributary drainage areas.
7. All storm sewers that are functioning during construction need to be protected.
8. A stabilized construction entrance is required with the proper filter mat.
9. Embankments need to be constructed with side slopes no steeper than 3H:1V.
10. Stormwater conveyance channels and their outlets/pipes need to be designed and constructed (within 48 hours) to withstand the expected flow velocity from the 10-year frequency storm without erosion.
11. Temporary diversions need to be constructed to direct all runoff from the hydrologically disturbed areas to the appropriate sediment trap or basin.
12. Soil stockpiles shall not be located in a floodprone or buffer area, and should not erode.

This plan must go beyond the installation of silt fences. It should include provisions for soil stabilization and runoff control throughout the entire site and the entire construction process.

It has been shown that erosion on an active construction site is typically 20-200 times greater than that on a farm field. Sediment is one of the single largest pollutants facing waterways and wetlands in the urban metropolitan area. Soil

erosion and sediment deposition can adversely affect the existing natural drainageways, causing changes in the hydrologic flow and degradation of water quality in the area. For any development, it is imperative that a comprehensive SESC plan be developed and implemented properly. The wetland complex on-site and downstream may be at particular risk of degradation if a SESC plan is not in place.

Please refer to the SESC section located in the appendix of this report for site-specific recommendations and practices. Feel free to contact our office with any questions or for more specific guidance in this area.

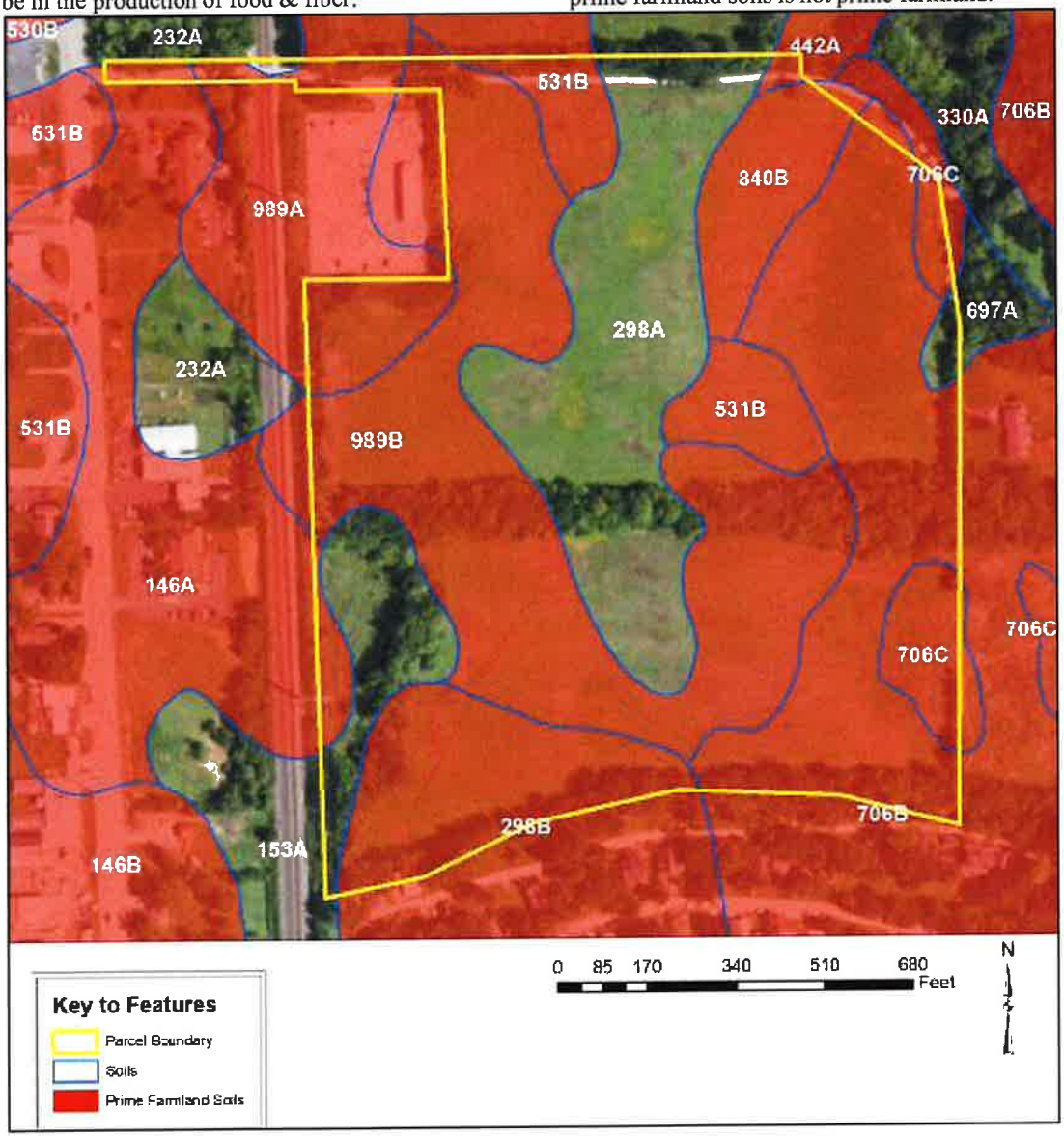
Highly Erodible Land

Symbol	Slope	HEL	Acres	Percent
146A	0-2%	No	0.54	1.37%
153A	0-2%	No	1.91	4.89%
232A	0-2%	No	0.06	0.15%
298A	0-2%	No	7.18	18.37%
298B	2-4%	No	3.45	8.81%
442A	0-2%	No	0.11	0.28%
531B	2-4%	No	2.09	5.34%
697A	0-2%	No	0.22	0.57%
706B	2-4%	No	7.60	19.44%
706C	4-6%	No	1.24	3.17%
840B	2-4%	No	1.88	4.81%
989A	0-2%	No	1.47	3.75%
989B	2-4%	No	11.36	29.05%
Total Highly Erodible Land			-	**0.00%**

PRIME FARMLAND SOILS

Prime farmland soils are an important resource. 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

Symbol	Prime	Acres	Percent
146A	Yes	0.54	0.78%
153A	No	1.91	2.78%
232A	No	0.06	0.08%
298A	No	7.18	10.43%
298B	Yes	3.45	5.01%
442A	Yes	0.11	0.16%
531B	Yes	2.09	3.04%
697A	No	0.22	0.33%
706B	Yes	7.60	11.04%
706C	Yes	1.24	1.80%
840B	Yes	1.88	2.73%
989A	Yes	1.47	2.13%
989B	Yes	11.36	16.50%
Total Prime Farmland Soils		**29.74**	**43.19%**

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.)

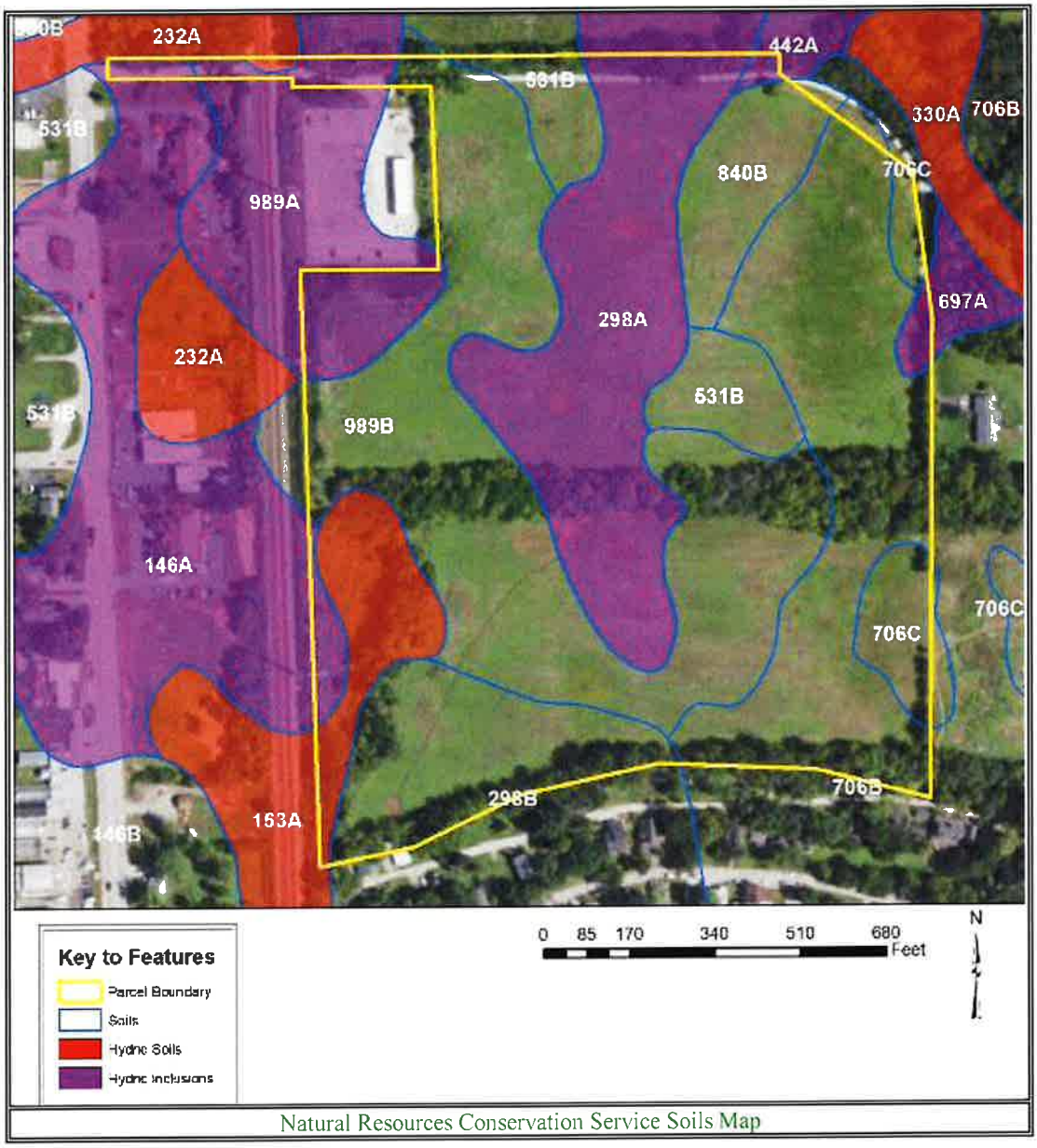
For an intense land use, such as a subdivision, the McHenry County SWCD recommends the following:

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.

In general, the District does not recommend building on hydric soils because of the unfavorable properties they exhibit and because of their long term, negative effects on the structures built.

Hydric Soils & Soils with Hydric Inclusions

Symbol	Hydric	Hydric Inclusions	Acres	Percent
146A	No	Yes	0.54	1.30%
153A	Yes	No	1.91	4.65%
232A	Yes	No	0.06	0.14%
298A	No	Yes	7.18	17.49%
298B	No	No	3.45	8.39%
442A	No	Yes	0.11	0.27%
531B	No	No	2.09	5.09%
697A	No	Yes	0.22	0.55%
706B	No	No	7.60	18.51%
706C	No	No	1.24	3.02%
840B	No	No	1.88	4.58%
989A	No	Yes	1.47	3.57%
989B	No	No	11.36	27.66%
Total Hydric			**1.97**	**4.80%**
Total Soils with Hydric Inclusions			**9.52**	**23.17%**



Natural Resources Conservation Service Soils Map

Field Tile Map: **A check of known field tiles, did not identify field tiles on the parcel.**

DRAINAGE, RUNOFF AND FLOOD INFORMATION

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. 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.

It is the policy of the Board to recommend against any construction within/neighboring a floodplain in the interest of preserving natural floodplain capacity and to insure that flooding problems are not magnified in Lake County.

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.

USGS Flood of Record Map

This parcel is located on rolling topography (slopes 0 to 6%) involving high and low areas (elevation ranges from 780' above sea level to 791' above sea level). An erosion control system should include a sedimentation basin to address these exiting concentrated flows during construction. The same area used for a sedimentation basin during construction can be used for a stormwater retention system after construction.

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 previous flooding on 0% of the parcel.


785
790
780
775

Federal Emergency Management Agency: Flood Insurance Rate Map Panel 55059C0277D

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

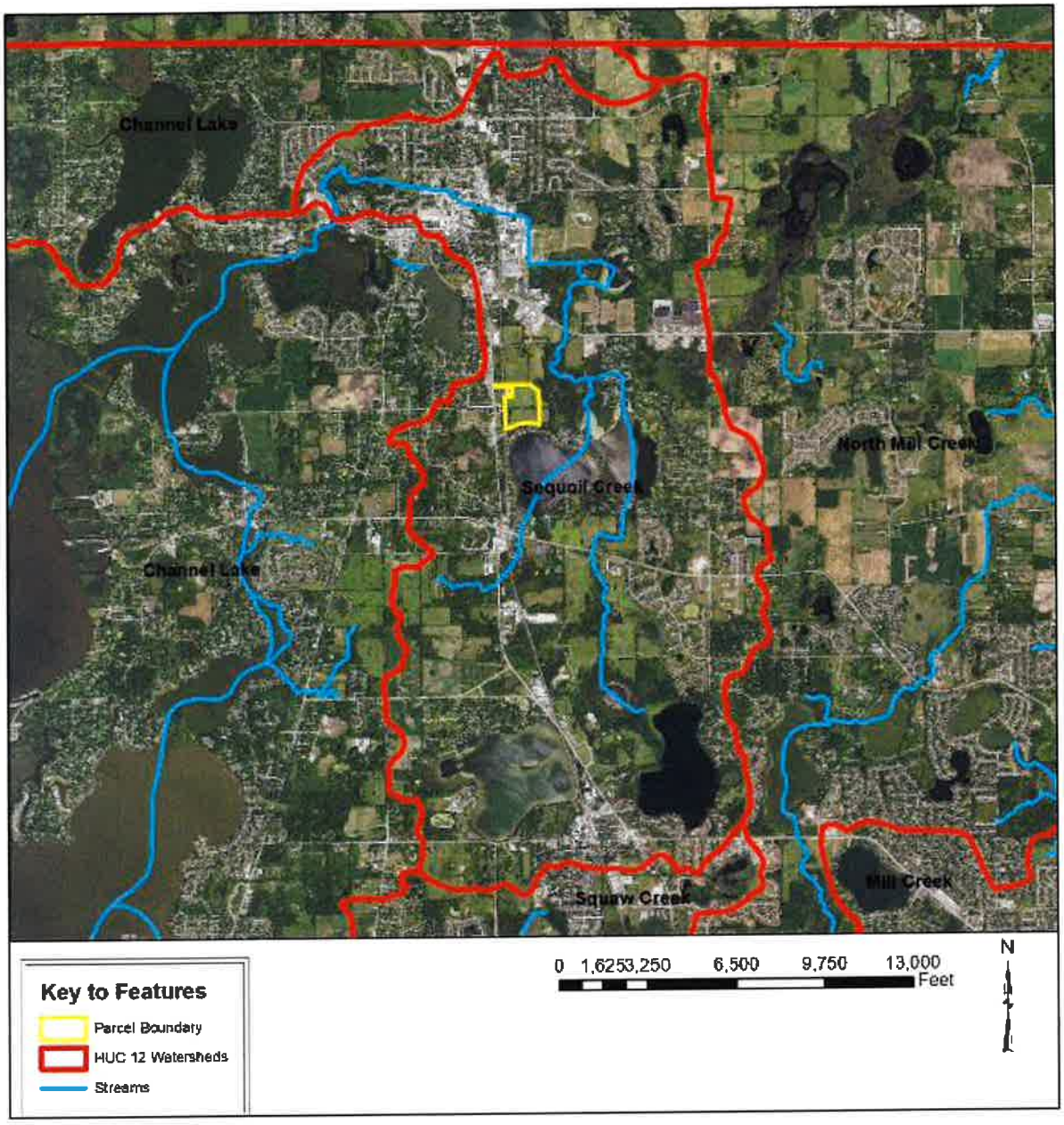
WATERSHED PLANS

What is a watershed?

No matter where you live, you live in a watershed. A watershed is the area of land that contributes/drains water to a certain point/ to a single body of water, based on the topography of the surrounding area, such as a stream, lake, wetland, or estuary. Natural events and human activities affect the watershed it lies within and even surrounding watershed areas. There are many activities that impact watersheds: recreation & tourism, water uses and transfers, forestry, agriculture, waste disposal, transportation, power generation, industrial discharges, urbanization, and resource extraction. There are many resulting threats from these impacts, such as, habitat loss and degradation, water quality and flow modification, chemical pollutants, nutrients, sediments, pathogens, invasive species, and thermal modification. In Lake County, there is a 10 to >25 percent of waters threatened within watersheds, divided by the total number of water miles in those watersheds. This information above was gathered from the U.S. Environmental Protection Agency's "Protecting and Restoring America's Watersheds" Document. For detailed information about current subwatershed management plans and studies please contact the Lake County Stormwater Management Commission (847) 918-5260. The parcel is within the northern ¾ of the parcel is within the Sequoit Creek Subwatershed (HUC 12-071200061004), which is within the Fox River Watershed.

The watershed plans can be found at these links:

https://www.lakecountyil.gov/DocumentCenter/View/3937/Sequoit-CreekWatershed-Management-Plan2006-PDF


Channel Lake
Sequoit Creek
North Mill Creek
Channel Lake
Squaw Creek
Mill Creek
Key to Features
Parcel Boundary
HUC 12 Watersheds
Streams
0 1,6253,250 6,500 9,750 13,000
Feet
N

WETLAND INFORMATION

These maps are not intended to be used as an absolute delineation of jurisdictional wetland boundaries. Rather, they are planning tools that can serve to identify the likely presence of wetlands in a given area. A wetland delineation can only be made by a field investigator whose work is recognized by the U.S. Army Corps of Engineers (COE). Jurisdictional wetlands/Waters of the U.S. are subject to the regulatory authority of the COE under Section 404 of the Clean Water Act, and isolated wetlands are subject to the regulatory authority of the Lake County Stormwater Management Commission (SMC) under the Watershed Development Ordinance (for corporated communities) and the Lake County Planning & Zoning Department under the Unified Development Ordinance (for unincorporated areas). A wetland delineation has to be performed to determine jurisdictional authority.

It is the policy of the District to strongly recommend against the destruction or major modification of wetlands by filling, dredging or by other non-direct impacts such as water pollution or damage due to sedimentation.

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.

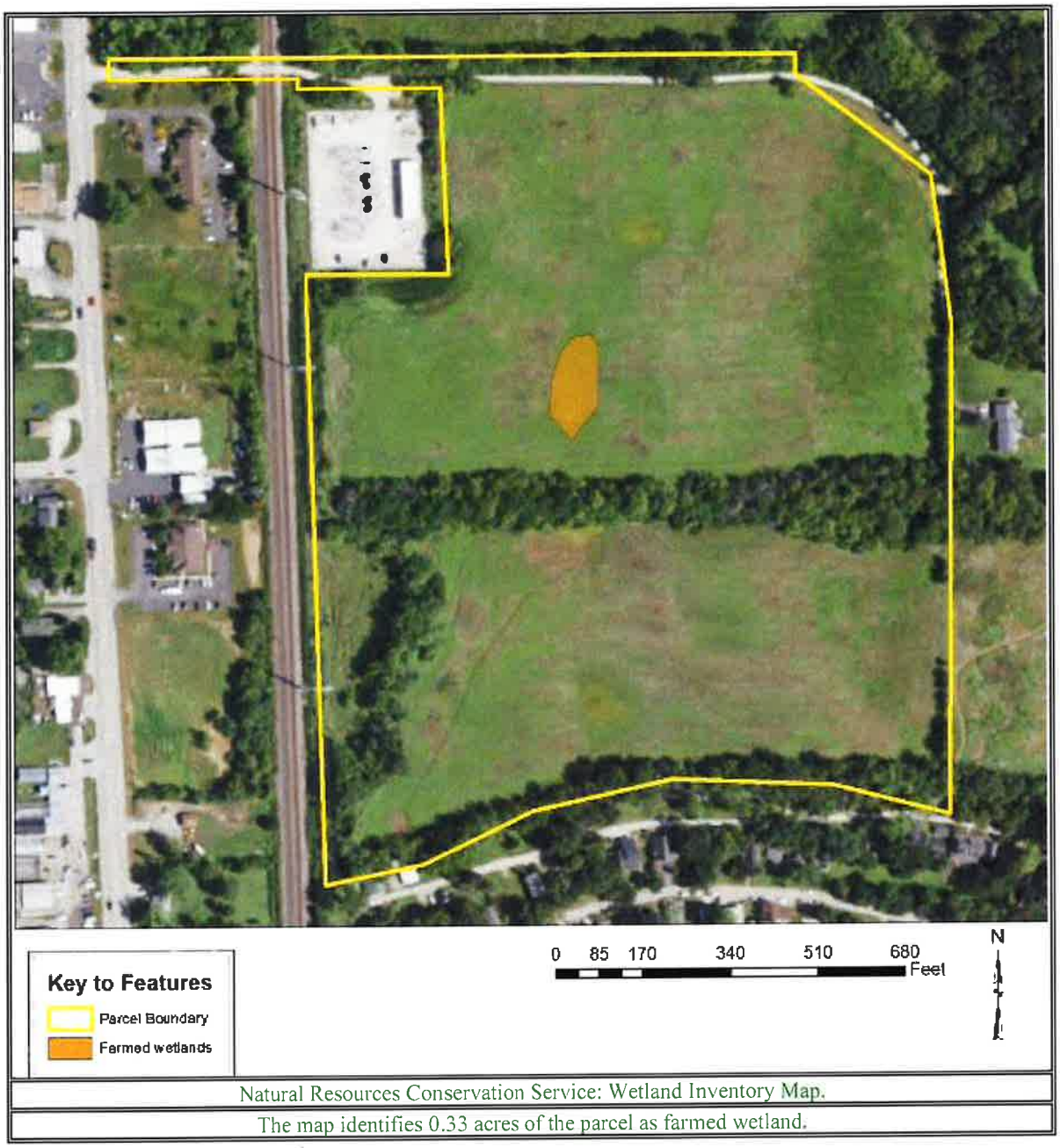
These benefits are particularly valuable in urbanizing areas as development activity typically adversely affects water quality, increases the volume of stormwater runoff, and increases the demand for groundwater. In an area where many individual homes rely on shallow groundwater wells for domestic water 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.

USDA-NRCS Wetland Inventory

This section contains the NRCS (Natural Resources Conservation Service) Wetlands Inventory. 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.)



Natural Resources Conservation Service: Wetland Inventory Map.

The map identifies 0.33 acres of the parcel as farmed wetland.

The map identifies 2.67 acres of the parcel as wetland.

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 ADID wetlands on the parcel in question.


Key to Features
Parcel Boundary
ADID Wetlands
0 85 170 340 510 680
Feet
N

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 State of 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
- **Lake County Department of Building & Zoning (UDO):** (847) 360-6330
- **Lake County Stormwater Management Commission:** (847) 918-5260
- **Flood plains: Illinois Department of Natural Resources \ Office of Water Resources**, 201 W. Center Court, Schaumburg, IL 60196-1096, phone (708)705-4341
- **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. Lake County has the greatest known number of records of any county in the state at almost 300 ("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. Thus, it is not surprising that Lake County has so many endangered species on record since it still has approximately 10% of its land area in natural shallow water wetland. This compares to a statewide figure of 2.6%. Thus, Lake County has a unique and valuable resource that needs to be protected and managed properly.

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.

CONTACT LIST

U.S. Army Corps of Engineers
Chicago District
111 N. Canal St., 6th Floor
Chicago IL 60606-7206
312/353-6400

Federal Emergency Management Agency
175 Jackson Blvd., 4th Floor
Chicago IL 60604
312/431-5501

U.S. Fish & Wildlife Service
Chicago Field Office
1250 South Grove Avenue., Suite 103
Barrington IL 60010
847/381-2253

Illinois Department of Natural Resources
Division of Natural Heritage
600 N. Grand Ave. W.
Northwest Office Plaza, Suite 4
Springfield IL 62706
217/785-8774

Illinois Department of Natural Resources
Private Lands Biologist
9511 W. Harrison St.
Des Plaines IL 60010
708/294-4129

Illinois Department of Transportation
Division of Water Resources
201 W. Center Court, 3rd Floor East
Schaumburg IL 60196-1096
708/345-9780

Lake County Health Department
Division of Environmental Health
3010 Grand Ave.
Waukegan IL 60085
847/360-6700

Chicago Metropolitan Agency for Planning
233 S. Wacker Drive, Ste. 800
Chicago IL 60606
312/454-0400

Lake County Planning and Development
18 N. County St.
Waukegan IL 60085
847/360-6330

Lake County Department of Transportation
P.O. Box 220, Winchester Rd.
Libertyville IL 60048
847/362-3950

U.S. Environmental Protection Agency
Water Division
111 W. Jackson Blvd.
Chicago IL 60604
312/353-2147

Illinois Historic Preservation Agency
Old State Capitol
Springfield IL 62701
217/782-4836

Illinois Environmental Protection Agency
Division of Water Pollution Control
9511 West Harrison Road
Des Plaines IL 60016
847/294-4045

Illinois Department of Agriculture
Bureau of Soil & Water
State Fairgrounds
P.O. Box 19281
Springfield IL 62794
217/782-6297

Illinois State Geological Survey
Natural Resources Building
615 E. Peabody Dr.
Champaign IL 61820
217/333-4747

USDA Natural Resources Conservation Service
1648 S. Eastwood Dr.
Woodstock IL 60098
815/338-0049 x3

Lake County Stormwater Management Commission
333-B Peterson Rd.
Libertyville IL 60048
847/918-5260

Lake County Forest Preserve District
2000 N. Milwaukee Ave.
Libertyville IL 60048
847/367-6640

Lake County Planning, Building & Development
18 N. County St.
Waukegan IL 60048
847/360-6350

REFERENCES

Soil Survey of Lake County, Illinois, USDA-SCS in cooperation with the Illinois Agricultural Experiment Station – September 1970.

Geology For Planning In Lake County, IL. State of IL Department of Registration and Education, Illinois State Geologic Survey 1973.

USDA-SCS Illinois Soil Interpretation Record for Lake County Soil Series – latest amended.

USDA-SCS National Soils Handbook – latest amended.

Lake County Board of Health Ordinance, Article V, Regulations of Individual Sewage Tank Absorption Fields, Northeast Illinois USDA-SCS MODERATE, 1983.

Regulatory Maps of Des Plaines and North Branch Chicago River, IDOT, Division of Water Resources – latest amended.

Federal Emergency Management Agency Flood Insurance Studies (FEMA), for incorporated and unincorporated Lake County, Published U.S. Federal Insurance Administration – latest amended.

Flood Hazard Analysis, Des Plaines River Tributaries, Lake, Cook, and DuPage Counties, USDA-SCS and IDOT – DWR – September 1981.

Lower Des Plaines Tributaries Watershed, Cook, DuPage, and Lake Counties, Illinois USDA-SCS, MSD, IDOT-DWR – July 1987.

Floods in Northeastern Illinois Quadrangles Hydrologic Investigations, Department of Interior, USGS.

Classification of Wetlands and Deep Water Habitats of the U.S., Department of Interior, Fish and Wildlife Service, December 1979.

Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control, Published by Northeast Soil Erosion and Sediment Control Steering Committee – Green Book (originally published 1981, Revised in 1988).

A Field Guide to the Wetlands of Illinois, IDOC, 1988.

Virginia Erosion and Sediment Control Handbook, published by Commonwealth of Virginia, Virginia Soil and Water Conservation Commission, 2nd Edition – 1980.

USDA-SCS Technical Guide, Field Office, Grayslake, Illinois – latest amended.

USGS Topographic Series (7 ½ min. series), published by the Geographical Survey – latest amended.

IEPA – Stormwater Detention for Water quality Benefits, NIPC – January 1986.

Stormwater Management, IDOT-DWR, prepared by Southwest Illinois Metropolitan and Regional Planning Commission and Technical Advisory Committee, December 1982.

Lake County Soil and Water Conservation District, Subsurface Drainage Maps (on 1954 Aerials).

Lake County Planning and Zoning and Environmental Quality Aerial Maps of County – May 1980, 1986.

Natural Areas Inventory, Publish IDOC, Springfield, Illinois 62706, November 1978.

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

Potential for Contamination of Shallow Aquifers in Illinois (Plate 2). Illinois Department of Energy and Natural Resources – State Geological Survey Division. Natural Resources Building, 615 E. Peabody Drive, Champaign, Illinois 61820, 1984.

Illinois Environmental Protection Agency, Standards and Specification for Soil Erosion and Sediment Control, Illinois EPA – October 1987.

National Wetlands Inventory Maps, Department of the Interior, Fish and Wildlife Service, 1984.

2000 Land Atlas & Plat Book, Lake County IL, 11th Edition. Published by Rockford Map Publishers, Inc.

Appendix:

SOIL EROSION & SEDIMENT CONTROL

Development on this site must include the use of a Soil Erosion and Sedimentation Control (SESC) plan, under the Watershed Development Ordinance (WDO) of the Lake County Stormwater Management Commission. 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. It is important that a comprehensive SESC plan be developed for all phases of site development, that these practices are installed prior to any site disturbance, and rigorously maintained throughout all phases of the project.

The SESC plan for the proposed development must take into consideration the property's proximity to highly valued habitats and the potential for negatively impacting these areas. The plan needs to be comprehensive and properly implemented and maintained.

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 SESC plan for the proposed development must take into consideration the presence of highly erodible soils. The plan needs to be comprehensive and properly implemented and maintained.

For developments, the District recommends that the following erosion control measures be included in development plans, implemented and maintained throughout the life of projects. Each of these recommendations can be referenced by code number in the Illinois Urban Manual.

Silt Fencing (Code 920): Silt fences are very often installed improperly, overused, and not properly monitored or maintained. At all sites, silt fences should be trenched in (six inches) around any body of water and waterways. The silt fence should be used to handle sheet flow only, not concentrated flow such as in swales. The fence, which should be installed prior to any land disturbing activity, should be inspected weekly and after significant rain event.

Storm Sewer Inlet Protection: The use of straw bales for inlet protection is not recommended due to their lack of effectiveness and high maintenance requirements. Instead, any one of the 3 following practices will be much more effective:

a. Block and gravel system (Code 850)
b. Excavated drain (Code 855)
c. Fabric drop (Code 860) – this practice involves placing geotextile fabric under the grates. **This practice requires weekly inspections.**

Use of Detention Basins During Construction: The detention basin should be excavated prior to any other grading activities. The basin can be used as a sediment trap during construction if it is over-excavated or later cleaned out after construction has been completed. If the detention area will not be used as a sediment basin, a silt fence should be installed around the upslope perimeter of it to prevent it from filling in.

Rock Outlet Protection (Code 910): The outlet end of all culverts, conduits or channels should be stabilized with properly sized rip-rap placed over geotextile fabric. This will protect the outlet structure, prevent scour erosion and minimize downstream erosion by reducing the velocity and energy of concentrated stormwater flows at these points of high velocity flow.

Concentrated Flow Areas: The use of straw bales in areas of concentrated flow areas, such as swales, is not recommended. Their poor filtering ability and high maintenance requirements make them ineffective for soil erosion control. Alternatives to straw bales include:

a. Rock Check Dams (Code 905, Draft)
b. Silt fence in conjunction with a reinforcing wire fence with steel posts.
c. Silt dykes: These reusable, triangular fabric dykes can be used to control erosion in swales.

All swales should be protected with sod or erosion control blankets immediately after final grading.

Grading and Topsoil Activities: If the site will be mass graded, consideration must be given to protection of the site after topsoil removal and erosion prevention of the topsoil stockpile. To do this, the following concepts can be used:

a. Temporary seeding of graded area and topsoil stockpile (Code 965)
b. Mulching of graded area (Code 875)
c. Silt fencing around topsoil stockpile

Stabilized Construction Entrance: (Code 930) Special consideration should be given to the prevention of sediment being brought off-site. A stabilized pad of aggregate underlain with filter fabric should be located at any point where traffic will be entering or leaving the site to or from a public right-of-way during active construction.

Temporary Seeding: Per the County's Watershed Development Ordinance, all areas that will be exposed longer than 14 working days must be temporarily seeded or mulched. Appropriate seeding includes annual rye or oats.

For large drainage areas, temporary sediment basins should be installed (Code 960).

Porous Pavement (Code 890): A pavement consisting of strong materials having regularly interspersed void areas which are filled with pervious materials, such as sod, gravel or sand. The purpose of this practice is to reduce water pollution from low-volume traffic areas by providing a bearing surface having adequate strength to accommodate vehicles while allowing infiltration of surface water and filtration of pollutants. This practice is intended to achieve this purpose by:

1) Reducing volume and peak rate of runoff flow, thus reducing the likelihood of sewer overflows, flooding, and downstream erosion, and sediment pollution.
2) Reducing the loading and concentration of pollutants in the runoff.

Preventing the onset of erosion is much less expensive and much more effective than keeping erosion in check and conducting clean-up efforts when these efforts fail.

Detailed information on the most appropriate methods of controlling erosion and sedimentation in urbanizing areas may be found in the publication Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois (Greenbook) as well as the **Illinois Urban Manual**. These manuals and additional technical assistance may be obtained by contacting this office. A copy of the Lake County Stormwater Management Commission Technical Reference Manual can be obtained by calling 847-918-5260. The Northeastern Illinois Planning Commission (NIPC) has published the Suggested Soil Erosion and Sedimentation Control Ordinance: Guide for Local Officials. This can be ordered by calling 312-454-0400.

Our office is available for consultation on soil erosion and sediment control concerns. We also periodically sponsor workshops on this topic.

OPEN SPACE MANAGEMENT

Open space is an important resource, especially in an urban area as it provides recreational opportunities, valuable wildlife habitat and resource protection.

A common misconception regarding open space is that by merely protecting a natural area from direct or indirect impacts, its long-term survival has been insured. Open space must be properly managed. This can include the removal of undesirable (non-native or invasive) vegetation and the restoration of native plant communities to enhance habitat for local species of wildlife.

Woodland, wetland and native grassland areas are complex ecosystems that must be perpetually managed to insure their continued biological diversity. A typical landowner may not have knowledge of this type of management, possess the means by which to do it, or have the desire to perform the management, and may even undertake activities which adversely affect these areas.

Open space areas may be owned in a variety of ways. The most common technique is a property owners association in which each person owns a fractional share of the open land and has a legal responsibility to contribute to its maintenance and upkeep. The use of the land is restricted by deed restrictions. Trail systems can be developed to allow all residents of the subdivision to utilize these areas for passive recreation. A second option is private ownership (lot owners or the developer) with deed restrictions.

Tax responsibility can be a consideration. Open space in a development is taxable land, though the deed restrictions lower the value of the open space. This is offset, however, by the increased value of homes adjoining the open space.

Since homeowners' associations may not have the technical and financial resources to adequately manage such areas, and the area is still potentially subject to future land use change requests, transferring ownership to a conservancy group, park district, forest preserve district or other such resource-oriented organization is a better option. Trained personnel whose primary goal is to maintain the area into perpetuity can conduct management activities on an area-wide basis.

Minimally, an open space management plan needs to be developed and implemented which includes a funding mechanism to insure long-term management.

DRAINAGE DISTRICTS AND WHO TO CALL FOR DRAINAGE PROBLEMS

Active Drainage Districts in Lake County, Illinois:

East Skokie – (847) 831-2371 (includes areas in Highland Park, Lake Forest, Highwood, Lake Bluff, North Chicago, & Waukegan).
West Skokie – (312) 782-4780 (includes areas in Libertyville, Shields, West Deerfield, and Vernon Townships).
Union – (847) 945-0600 (includes areas in the communities of West Deerfield, Lake County and North Field, Cook County).
Slocum – (847) 526-1355 (includes areas in Cuba and primarily Wauconda Townships).
Squaw Creek – (847) 582-2255 (includes areas in Avon, Grant and primarily Fremont Townships).
Grubb School – (847) 395-5787 (includes areas in Antioch).
Avon-Fremont – (847) 223-2037 (includes areas in Avon and Fremont Townships).
Beach Park – (847) 336-2985 (includes areas in Beach Park, Park City, North Chicago, and Waukegan).

FOR MORE INFORMATION ON DRAINAGE DISTRICTS, PLEASE CALL THE LAKE COUNTY STORMWATER MANAGEMENT COMMISSION AT (847) 918-5260.

DRAINAGE PROBLEMS - WHO TO CALL IN LAKE COUNTY, IL

REFER TO:	WHEN THE CALL RELATES TO:	ADDITIONAL INFORMATION:
LAKE COUNTY STORMWATER MANAGEMENT COMMISSION (847) 918-5260 WWW.CO.LAKE.IL.US/SMC	1. Neighborhood, watershed or regional scale problems 2. Interjurisdictional issues 3. Involves a violation of the Lake County Watershed Development Ordinance [related to new development and in non-certified communities]	Relies on other governmental units to respond to smaller scale problems; has field staff to investigate drainage complaints in non-certified communities; funding available for repair or maintenance of drainage facilities and drainage problems; compiles drainage data for watershed planning and should be notified by Certified Communities of major problems.
LAKE COUNTY PLANNING, BUILDING, & DEVELOPMENT DEPARTMENT, ENGINEERING AND ENVIRONMENTAL SERVICES DIVISION (E&ES) (847) 377-2600	1. Complaint is on a parcel located in an unincorporated area. 2. Drainage complaints, erosion control, Site Development Permits 3. Individual, neighborhood, watershed scale problems 4. Involves a violation of the Lake County Unified Development Ordinance (related to older or new development)	Has field staff to inspect and respond to drainage complaints in unincorporated areas; can require remedial activity if in violation of the Lake County Unified Development Ordinance; funding available for repair or maintenance of drainage facilities; provides notification to SMC of regional scale problems.
LOCAL MUNICIPALITIES	1. Lot and Neighborhood level drainage concerns 2. Emergency response: sandbags, evacuation procedures	Usually have staff or budget through public works to handle common problems; have authority to enter lands to remove blockages even outside own boundaries.
TOWNSHIP HIGHWAY DEPARTMENTS	1. Drainage concerns are within the right-of-way of a township road.	Sometimes staff is able to reduce local flooding problems by improvements along ROW but is not common; policies vary from Township to Township; not able to assist in areas outside its own ROW.
LAKE CO. DIV. OF TRANSPORTATION (LCDOT) (847) 362-3950	1. Bridges, culverts, ditches, within the right-of-way (county roads)	Maintains all bridges, culverts and ditches within the ROW of county highway signs signified by blue and gold route markers saying Lake County.
LAKE COUNTY HEALTH DEPARTMENT (LCHD), DIVISION OF ENVIRONMENTAL HEALTH (847) 360-6740	1. Contamination of an individual well. 2. Failure of individual septic	Primary concern for water quality specifically public beaches, indiv. wells & septics; required to respond within 14 days but can only assist if flooding problems results in failure of septic or contamination of well.
LAKE COUNTY SOIL AND WATER CONSERVATION DISTRICT (SWCD) (847) 223-1056 U.S. DEPT. OF AGRICULTURE (NRCS)	1. Agricultural drainage issues or drainage issues related to soil erosion.	Provides technical assistance and education; has some information on farm tiles; field staff makes site visits upon requests.
DRAINAGE DISTRICTS	1. Problem associated with drainage ditches and streams within a drainage district.	Provides information, technical assistance; field staff may be available for site visits in cases of severe drainage, soil erosion.
FOX WATERWAY AGENCY (847) 587-8540	1. Debris removal, shoreline protection, flood control, flood warning for Chain area.	Primarily responsible for dredging, debris removal, shoreline protection, flood control, flood warning for Chain O'Lakes area; has staff for site visits.
LAKE COUNTY EMERGENCY MANAGEMENT AGENCY (LCEMA) (SHERIFFS OFFICE) (847) 377-7100	1. Request for sandbags and evacuation procedures is coordinated by municipal EMA coordinators and township officials.	Primarily responsible for emergency services in a disaster; works closely with local ESDA coordinators during a disaster/flood event. Refer requests for sandbags and evacuation procedures to local municipality or to township; does not distribute insurance claims.
US GEOLOGICAL SURVEY - URBANA, IL (217) 344-0037	1. Provides real-time, unofficial river/stream stage information, rain totals (SMC rain/stream gages are the same as USGS gages)	Data available at: http://il.water.usgs.gov

STORMWATER MANAGEMENT AND WATER QUALITY IMPACTS

Development of a property results in compaction of soil and the addition of areas of impervious surfaces (rooftops, roadways, etc.) which will greatly increase the amount of stormwater runoff generated by the site.

The District strongly recommends the use of on-site stormwater management to reduce the potential for degrading water quality in the area. Runoff should be retained in on-site basins in order to provide sufficient opportunity to improve the water quality of the runoff to prevent degradation of the water quality in the area. Stormwater should be released at a rate that approximates natural, undisturbed runoff conditions. Insufficient stormwater management on the site could threaten the stormwater capacity of the surrounding drainageways or aggravate flooding conditions on surrounding properties or elsewhere in the watershed.

The District discourages allowing stormwater runoff produced by urban development to flow into natural flood control features such as floodplains and wetlands. On this site, these features are currently accepting and regulating the stormwater runoff that is generated by undeveloped land. If the runoff generated by impervious surfaces such as rooftops and roadways is loaded into these natural features, their flood control capabilities could be overburdened and flooding damage could result. In addition, pollutants association with stormwater runoff can degrade the water quality in the area.

The utilization of wet basin stormwater retention ponds is recommended by the District over the use of dry detention basins as wet basin designs tend to provide increased water retention times, allowing for greater water quality improvements to occur. Increased retention times allow more sediment to settle out of suspension. Because of this sediment-trapping tendency, suitable access needs to be provided to a wet basin to allow for periodic maintenance and sediment removal.

The basins should be installed in the first phase of the project as the basin or pond can serve as a sediment trap during the construction phase.

It is also encouraged to design the detention area to provide multiple benefits to the community. The incorporation of open space, constructed wetlands and recreational areas adds to the value of the detention facility as well as to its water quality improvement capabilities. In order to reduce the attraction of a resident Canada goose population, the retention pond should not be mowed down to the edge. Unmowed native plants are a natural deterrent to nuisance goose problems.

Numerous publications are available which provide guidance on planning stormwater management systems and incorporating multiple benefits. These include Stormwater Detention for Water Quality Benefits (NIPC, 1986), Stormwater Management (IDOT-DWR, 1983), the Lake County Technical Reference Manual (SMC, 1992), A Current Assessment of Urban Best Management Practices (Metropolitan Washington Council of Governments, 1992), Design of Stormwater Wetland Systems (Metropolitan Washington Council of Governments, 1992), The Use of Wetlands for Controlling Stormwater Pollution (Terrene Institute, 1992), and Urban Runoff Pollution Prevention and Control Planning (U.S. EPA Handbook, EPA/625/R-93/004, 1993).

NATIONAL POLLUTATN DISCHARGE ELIMINATION SYSTEM

Discharges of stormwater from construction sites that disturb 1 or more acres of land must be covered by an NPDES permit. Under the NPDES General Permits for Stormwater Discharges from Construction Sites, the EPA requires the development and implementation of a pollution prevention plan.

A pollution prevention plan for the construction is designed to reduce pollution at the construction site before it can cause environmental problems. Many of the practices and measures required for the

pollution prevention plan represent the standard operating procedure at many construction sites. Stormwater management controls, erosion and sediment controls, inspection and maintenance have all been used at a number of construction projects.

The General NPDES permit can be obtained through the Illinois Environmental Protection Agency, Division of Water Pollution Control, 2200 Churchill Road, P.O. Box 19276, Springfield, Illinois 62794-9276.

ATTACHMENT I

FAA Clearance Letters

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2023-AGL-3592-OE

Issued Date: 03/08/2023

Matt Walsh
Nexamp-MW
101 Summer Street
Boston, MA 02110

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel 114393 - Loon Lake
Location:	Antioch, IL
Latitude:	42-27-38.89N NAD 83
Longitude:	88-05-10.02W
Heights:	786 feet site elevation (SE)
	20 feet above ground level (AGL)
	806 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 09/08/2024 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (847) 294-7458, or fred.souchet@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2023-AGL-3592-OE.

Signature Control No: 573841099-575480209 (DNE)
Fred Souchet
Specialist

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2023-AGL-3593-OE

Issued Date: 03/08/2023

Matt Walsh
Nexamp-MW
101 Summer Street
Boston, MA 02110

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel 114393 - Loon Lake
Location:	Antioch, IL
Latitude:	42-27-29.07N NAD 83
Longitude:	88-05-09.40W
Heights:	789 feet site elevation (SE)
	20 feet above ground level (AGL)
	809 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 09/08/2024 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (847) 294-7458, or fred.souchet@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2023-AGL-3593-OE.

Signature Control No: 573841100-575480208 (DNE)
Fred Souchet
Specialist

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2023-AGL-3594-OE

Issued Date: 03/08/2023

Matt Walsh
Nexamp-MW
101 Summer Street
Boston, MA 02110

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel 114393 - Loon Lake
Location:	Antioch, IL
Latitude:	42-27-28.84N NAD 83
Longitude:	88-05-22.45W
Heights:	785 feet site elevation (SE)
	20 feet above ground level (AGL)
	805 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 09/08/2024 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (847) 294-7458, or fred.souchet@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2023-AGL-3594-OE.

Signature Control No: 573841112-575480207 (DNE)
Fred Souchet
Specialist

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2023-AGL-3595-OE

Issued Date: 03/08/2023

Matt Walsh
Nexamp-MW
101 Summer Street
Boston, MA 02110

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel 114393 - Loon Lake
Location:	Antioch, IL
Latitude:	42-27-38.65N NAD 83
Longitude:	88-05-21.52W
Heights:	788 feet site elevation (SE)
	20 feet above ground level (AGL)
	808 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 09/08/2024 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO

SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (847) 294-7458, or fred.souchet@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2023-AGL-3595-OE.

Signature Control No: 573841113-575480210 (DNE)
Fred Souchet
Specialist

ATTACHMENT J

Illinois Department of Transportation (IDOT) Correspondence

Gundlach, Rick

From: Shirani, Roozbeh <Roozbeh.Shirani@illinois.gov>
Sent: Friday, August 4, 2023 2:48 PM
To: Gundlach, Rick
Subject: Re: Preliminary Access Feedback Requested- Proposed Community Scale Solar Project- Antioch, Lake County, IL

Follow Up Flag: Follow up
Flag Status: Flagged

Rick

Please submit 2 hard copies of engineering plans and plat of survey with detailed description of project for our review. Please let me know if you have any questions.

Thank you

Get Outlook for iOS

From: Gundlach, Rick <[redacted]>
Sent: Thursday, August 3, 2023 4:28:31 PM
To: Shirani, Roozbeh <Roozbeh.Shirani@illinois.gov>
Cc: [redacted]
Subject: [External] RE: Preliminary Access Feedback Requested- Proposed Community Scale Solar Project- Antioch, Lake County, IL

Good afternoon, Mr. Shirani,

I wanted to follow up on my message below and confirm receipt. Please let us know if you have any questions or concerns, or if you'd like to arrange a time to discuss this project further.

Thank you,

Rick Gundlach, PWS
Environmental Project Manager

[redacted]

Stantec
500 North Broadway, Suite 1425
St. Louis, MO 63102

From: Gundlach, Rick
Sent: Wednesday, July 26, 2023 6:44 PM
To: Roozbeh.Shirani@illinois.gov
Cc: [redacted]
Subject: Preliminary Access Feedback Requested- Proposed Community Scale Solar Project- Antioch, Lake County, IL

Good evening Mr. Shirani,

We have a client who is looking at developing an approximately 38-acre site with a proposed community solar facility and in our preliminary meetings with Lake County, we were advised to reach out to you regarding our proposed access. In particular, the site is located off of N. IL Rte. 83, which we understand is under the jurisdiction of IDOT. For more specific reference, please see the pins below. Our proposed plan would be to access the site from Rte. 83 and utilize the existing paved secondary road.

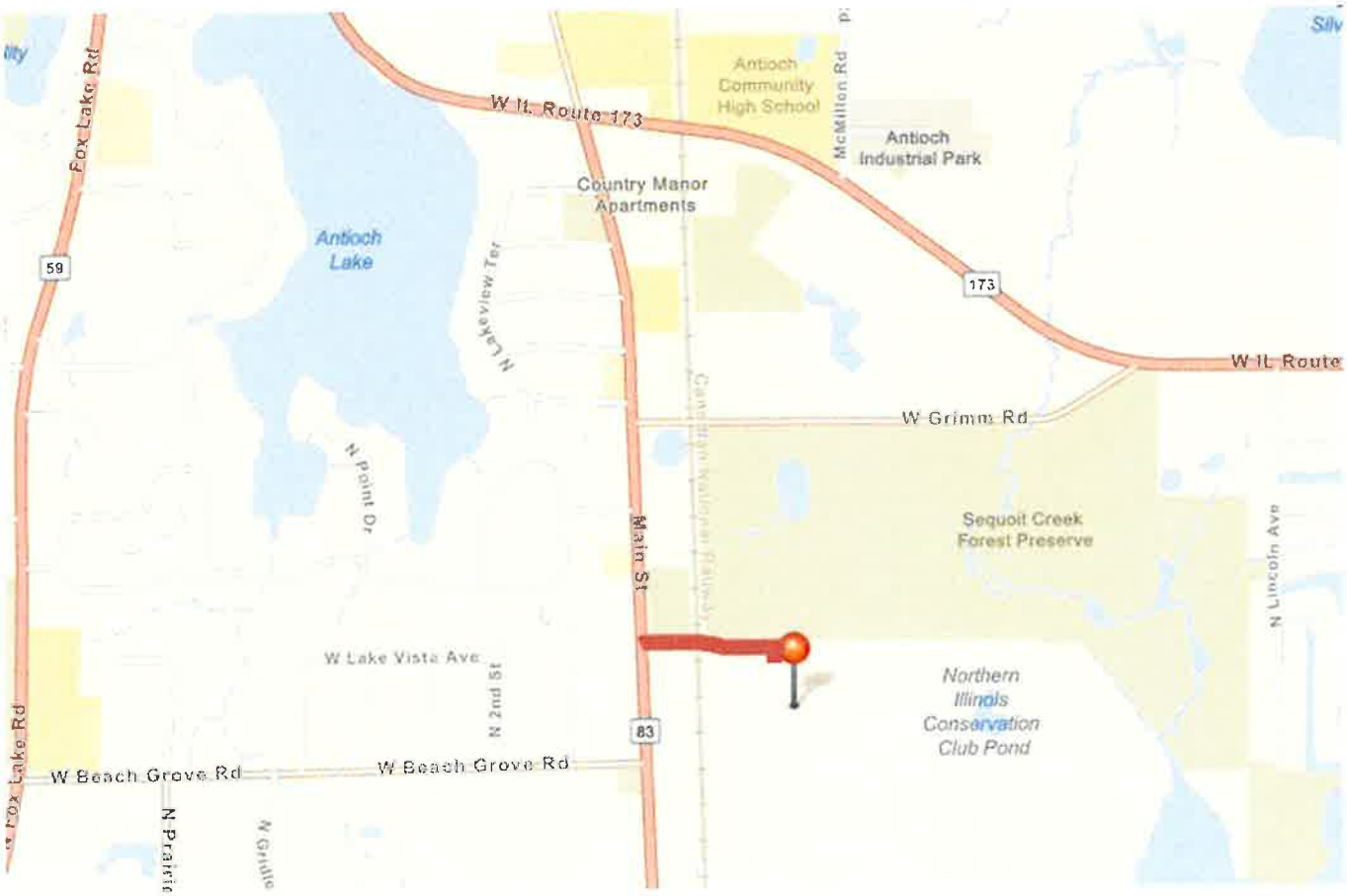
During the operational phase of the solar farm, we expect to see very limited traffic generation over the 20–40-year life of the project. The system will be remotely monitored, meaning the need for site visits during operations will be limited, though there will be a few visits per year for inspections, panel maintenance, and vegetation management (mowing). These vehicles will typically consist of pick-up trucks and small vans. During the 3–5-month construction phase, there will be a much greater number of vehicles, including semi-trailers, concrete trucks and dump trucks.

We wanted to get this information in your hands for a preliminary review. If you would, please let us know what additional information you would require in order to permit the use of IL Route 83 public roadway.

Thank you,
Rick

Aerial and Street Maps:


N IL Route 83
N Milwaukee Ave
W Lake Shore Dr



Looking NE from IL Route 83 toward secondary road that will be used to access the site:

Rick Gundlach, PWS
Environmental Project Manager

[redacted]

Stantec
500 North Broadway, Suite 1425
St. Louis, MO 63102

ATTACHMENT K

First Fire Protection District Correspondence

Gundlach, Rick

From: Jeff Gibson <jgibson@antiochfire.org>
Sent: Tuesday, August 1, 2023 12:25 PM
To: Gundlach, Rick
Cc: Broberg, Carl; Clementi, Matt; Lott, Rhett; Matt Walsh
Subject: Re: Solar 83 and Beach Grove Road_ Loon Lake Solar Project

Follow Up Flag: Follow up
Flag Status: Flagged

Good afternoon Carl. Access from what you proposed should be fine. We just want some type of access in case one of your people has a medical emergency in the solar field or obviously a fire scenario. I think this will be fine.

Thank You.

Jeff

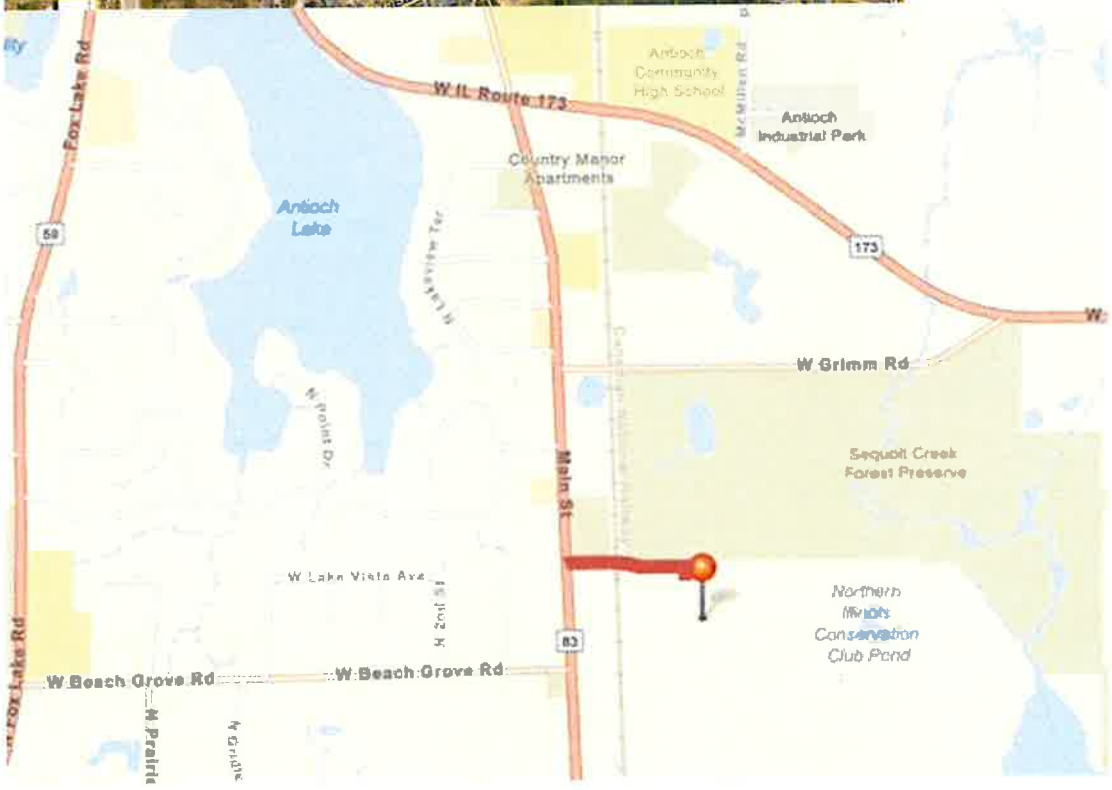
Jeff Gibson - Fire Marshal
First Fire Protection District of Antioch Township
835 Holbeck Drive
Antioch, IL 60002
Office (847) 395-5511 ext. 127
Cell (224) 804-8163

From: Gundlach, Rick <[redacted]>
Sent: Tuesday, August 1, 2023 12:20 PM
To: Jeff Gibson <jgibson@antiochfire.org>
Cc: [redacted]
<R[redacted]
Subject: RE: Solar 83 and Beach Grove Road_ Loon Lake Solar Project

Hi Jeff,

Thank you for reaching back on my recent inquiry on the proposed Loon Lake Solar Project in Antioch, IL. We appreciate the feedback.

Regarding ingress/egress, the project site will be accessed from Route 83 and will utilize the existing paved secondary road (see snippets below). The development will also have an internal access road system for navigation around the panels. Please let us know if you have any follow up questions or concerns.



Thanks again for your time,

Rick Gundlach, PWS
Environmental Project Manager

Mobile: 314-913-4925
Direct: 636-764-5879
rick.gundlach@stantec.com

Stantec
500 North Broadway, Suite 1425
St. Louis, MO 63102

From: Jeff Gibson <jgibson@antiochfire.org>
Sent: Tuesday, August 1, 2023 8:47 AM
To: Gundlach, Rick <[redacted]>
Subject: Solar 83 and Beach Grove Road
Importance: High

Good morning Rick. The Fire Chief forwarded your email to me. If it is just a basic solar filed all we ask is some access points or such in case of emergency (fire, medical emergency, etc.). Otherwise, we don't have any set requirements for a field of solar panels. Please contact me if you have more information or questions.

Thank You.

Jeff

Jeff Gibson - Fire Marshal
First Fire Protection District of Antioch Township
835 Holbeck Drive
Antioch, IL 60002
Office (847) 395-5511 ext. 127
Cell (224) 804-8163

ATTACHMENT L

U.S. Army Corps of Engineers Correspondence

Gundlach, Rick

From: Pompeii, Teralyn <Teralyn.R.Pompeii@usace.army.mil>
Sent: Wednesday, July 26, 2023 10:54 AM
To: Matt Walsh; Lennie, Brian; Broberg, Carl; Gundlach, Rick; Clementi, Matt; Lott, Rhett; Gerloski, Erica; Reick, Maddy
Cc: Machalek, Michael J CIV USARMY CELRC (USA)
Subject: RE: LRC-2023-403 - JD - Lake - Loon Lake Solar Parcel

Follow Up Flag: Follow up
Flag Status: Flagged

Hello -

The U.S. Army Corps of Engineers, Chicago District has received your request. The request has been assigned number LRC-2023-403; please reference this number in all future correspondence. The project manager assigned to your file is Mr. Michael Machalek. If additional information is requested during the review of your submittal, please email all documents directly to the assigned project manager.

The Regulatory Program is charged with protecting the Nation's aquatic resources and navigation capacity, while supporting reasonable development through fair and balanced decisions. Our goal is to provide the highest level of customer service while accomplishing this mission. Please contact me if you have any comments or concerns regarding the service you received. I appreciate your feedback.

For your convenience, additional program information is available on our website at http://www.lrc.usace.army.mil/Missions/Regulatory.aspx.

Very Respectfully,

Teralyn Pompeii, PE
Chief, Regulatory Branch
U.S. Army Corps of Engineers, Chicago District
312-846-5535 (Office)
773-360-4091 (Cell)
https://www.lrc.usace.army.mil/Missions/Regulatory/

From: Lennie, Brian [redacted]
Sent: Tuesday, July 18, 2023 9:18 AM
To: Chicago Requests <ChicagoRequests@usace.army.mil>
Cc: [redacted]
Subject: [URL Verdict: Neutral][Non-DoD Source] Loon Lake Solar Parcel, Antioch, Lake Co., IL

Hello,
Attached please find a wetland delineation report for the aforementioned property in Antioch, IL.
Please provide a boundary approval and jurisdictional determination.
The following information details the attached submission.

a) Project name: **Loon Lake Solar Parcel Wetland Delineation**

b) Detailed narrative describing the project purpose: **The owner is proposing future development of the parcel and a wetland delineated was completed in April 2023 for the parcel.**

c) Applicant/Requestor/Client Contact Information (Name, Address, Phone, Email): **Matt Walsh, Loon Lake Solar, LLC, 101 N. Wacker Dr., Suite 200, Chicago, IL, 60606** [redacted]

d) Consultant Contact Information (Name, Phone, Email): **Maddy Reick, Stantec, 12075 N. Corporate Parkway, Mequon, WI, 53092;** [redacted]

e) Latitude and Longitude (in decimal degrees) of the project area: **42.461366N -88.091929W**

f) Location description of project area (Address or Cross Streets, City, County, State): **41125 N. IL Route 83 & 23150 W. Lake Shore Dr., Antioch, Lake County, IL**

f) Type of Request (Pre-application Meeting, Jurisdictional Determination, Regional, Nationwide Permit, Individual Permit, Letter of Permission, Letter of No Objection, No Permit Required, etc.): **Boundary approval and jurisdictional determination**

Pleas let me know if you have any questions.
Thanks,
Brian

Brian Lennie
Senior Associate/Senior Scientist

[redacted]

Stantec
12080 Corporate Parkway, Suite 200
Mequon WI 53092-2661

U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT

REQUEST FOR A JURISDICTIONAL DETERMINATION

For use of this form, see ER 405-1-12; the proponent agency is CELRC-TS-R.

PRIVACY ACT STATEMENT

AUTHORITIES: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act (*RHA*) of 1899, 33 CFR Section 404 of the Clean Water Act, and Section 103 of the Marine Protection, Research, and Sanctuaries Act.
PRINCIPAL PURPOSE: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into water of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters.
ROUTINE USE*(s)*: Information provided on this form will be used in determining Department of the Army jurisdictional boundaries. Information in this application is made a matter of public record.
DISCLOSURE OF THE INFORMATION REQUESTED IS VOLUNTARY: however, the data requested are necessary in order to establish Federal regulatory jurisdiction. If the necessary information is not provided, the jurisdictional determination cannot be completed.

This form can be used when you want to determine if areas on your property fall under regulatory requirements of the U.S. Army Corps of Engineers (*USACE*). Please supply the following information and supporting documents described below. This form can be filled out online and then printed. It must be **SIGNED BY THE PROPERTY OWNER** to be considered a formal request. Submitting this request authorizes the US Army Corps of Engineers to field inspect the property site, if necessary, to help in the determination process. The printed form and supporting documents should be mailed to:

U.S. ARMY CORPS OF ENGINEERS, CHICAGO DISTRICT
REGULATORY BRANCH
231 SOUTH LASALLE STREET, SUITE 1500
CHICAGO, ILLINOIS 60604
FAX NUMBER: 312.353.4110
E-MAIL: ChicagoRequests@usace.army.mil

Additionally, you may either call our branch telephone at 312.846.5530 or view our website at http://www.lrc.usace.army.mil/Portals/36/docs/Regulatory/newapps.pdf to determine which number and project manager has been assigned to your request. Project Manager contact information can be found here: http://www.lrc.usace.army.mil/Missions/Regulatory/ContactInfo.aspx . Please contact us if you need any assistance with filling out this form.

SECTION I - LOCATION AND INFORMATION ABOUT PROPERTY TO BE SUBJECT TO A JURISDICTIONAL DETERMINATION

1. PROPERTY ADDRESS / LOCATION 41125 N. IL Route 83 & 23150 W. Lake Shore Dr., Antioch, IL 60002				
2. CITY (*Name*) OR UNINCORPORATED Village of Antioch			3. STATE IL	4. ZIP CODE 60002
5. COUNTY Lake			6. TOWNSHIP NAME Antioch	
7. QUARTER	8. SECTION 17 & 20	9. TOWNSHIP 46 N	10. RANGE 10 E	11. PRINCIPAL MERIDIAN (*PM*) 3
12a. LATITUDE IN DECIMAL DEGREES °NORTH 42.461366			b. LONGITUDE IN DECIMAL DEGREES °WEST -88.091929	
13. SIZE OF PROPERTY IN ACRES 39.08			14. TAX PERSONAL IDENTIFICATION NUMBER (*PIN*) 0217400027 & 0220200017	
15. PRIOR OR RELATED USACE PROJECT NUMBER				

16. IS THE PROPERTY SUBJECT TO A CONSERVATION EASEMENT OR DEED RESTRICTION ? ☐ YES ☒ NO IF YES, PLEASE EXPLAIN AND SUBMIT DETAILS OF THE PROJECT AREA.

17. WAS THE PROPERTY A SITE FOR MITIGATION PURSUANT TO A PROJECT PREVIOUSLY PERMITTED BY USACE? ☐ YES ☒ NO IF YES, PLEASE EXPLAIN AND SUBMIT DETAILS OF THE PROJECT AREA.

18. IS THE PROPERTY NEIGHBORING / ADJACENT TO / BORDERING A PROJECT PREVIOUSLY PERMITTED BY USACE? ☐ YES ☒ NO
IF YES, PLEASE EXPLAIN AND SUBMIT THE NAME OF THE PROJECT, THE PERMITTEE'S NAME AND / OR ADDRESS, AND CORPS PERMIT NUMBER, IF AVAILABLE.

SECTION II - PROPERTY OWNER CONTACT INFORMATION

1. PROPERTY OWNER NAME *(Last, First MI) (must be an individual)*
Walsh, Matt

2. PROPERTY OWNER COMPANY *(if applicable)*
Loon Lake Solar, LLC

3. MAILING ADDRESS *(Post Office Box, Street, City, State and Zip Code)*
101 N. Wacker Dr. Suite 200
Chicago, IL 60606

4. DAYTIME TELEPHONE NUMBER	5. FAX NUMBER	6. E-MAIL ADDRESS
[redacted]		

SECTION III - REQUESTOR NON-PROPERTY OWNER CONTACT INFORMATION

IF THE PERSON REQUESTING THE JURISDICTIONAL DETERMINATION IS NOT THE PROPERTY OWNER, PLEASE ALSO SUPPLY THE REQUESTOR'S CONTACT INFORMATION HERE.

1. REQUESTOR'S NAME *(Last, First MI)*
Maddy Reick

2. REQUESTOR'S COMPANY *(if applicable)*
Stantec

3. MAILING ADDRESS *(Post Office Box, Street, City, State and Zip Code)*
12080 Corporate Parkway, Suite 200
Mequon, WI 53092

4. DAYTIME TELEPHONE NUMBER	5. FAX NUMBER	6. E-MAIL ADDRESS
[redacted]		

SECTION IV - OTHER DATA AND SIGNATURE CERTIFICATION

1. OTHER DATA / INFORMATION THAT MAY ASSIST WITH DETERMINATION

Please provide a map and / or copy of the plat of survey identifying the physical boundaries of the property.

Additionally, if you have any of the following information, please include it with your request: wetland delineation, relevant maps, drain tile survey, topographic survey, and site photographs.

If you are considering doing work on the property, please identify on the required site map, plat of survey, or in a separate drawing: the footprint, location, and type of potential work. It will assist us in the determination process and reduce unnecessary delays of processing subsequent permits, if required.

I hereby certify that the information contained in the Request for a Jurisdictional Determination is accurate and complete:

2a. PROPERTY OWNER *(Last, First MI)*	b. DATE *(YYYYMMDD)*	c. PROPERTY OWNER'S SIGNATURE
Walsh, Matt	20230717	[redacted]

ATTACHMENT M

Threatened & Endangered Species Reports

Stantec

Memo

To:	Matt Walsh Nexamp	From:	Abigail Medis Stantec Consulting Services Inc.
File:	Loon Lake Solar Project	Date:	July 17, 2023

Reference: Loon Lake Solar Project – Federal and State Threatened/Endangered Resources Review

Dear Mr. Walsh,

Stantec Consulting Services completed a threatened and endangered resources review via the Illinois Department of Natural Resources (IDNR) Ecological Compliance Assessment Tool (EcoCAT) and obtained an Official Species List via the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool for the Loon Lake Solar Project (the "Project") in Lake County, IL.

The IPaC identified the federally-endangered northern long-eared bat (NLEB, *Myotis septentrionalis*), piping plover (*Charadrius melodus*); Karner blue butterfly (KBB; *Lycaeides melissa samuelis*), the federally-threatened red knot (*Calidris canutus rufa*), eastern massasauga rattlesnake (EMR; *Sistrurus catenatus*), eastern prairie fringed orchid (EPFO; *Platanthera leucophaea*), pitcher's thistle (*Cirsium pitcheri*), and an experimental population of whooping cranes (*Grus americana*) as potentially occurring within the Project (Attachment A). The EcoCAT, which also tracks federally-listed species and is generated with a higher level of precision compared to the IPaC, listed three Illinois Natural Area Inventory (INAI) sites, one County nature preserve, five fish species, two aquatic plants, and three state-listed birds that are not federally protected (Attachment B). IDNR subsequently issued a letter terminating consultation on March 24, 2023, which stated that impacts to these protected resources are unlikely (Attachment C).

Based on a field review completed in April 2023, the Project site is primarily comprised of an agricultural field that includes five small, potentially isolated farmed wetlands. Additional emergent and forested wetland communities were also identified in the northwest and southwestern portions of the site. A linear woodland community bisects the central portion of the field from east to west, and most of the perimeter of the Project site is bordered by woodland or tree lines. The woodland and forested wetland communities and the tree lines bordering the field may provide suitable habitat for bats. Tree-clearing is currently planned in the forested area in the central portion of the site. However, no records of known hibernacula or maternity roosts are documented in the Project vicinity and the determination key completed for the NLEB resulted in a "may affect, not likely to adversely affect" determination (Attachment D). Additionally, if trees were cleared during the inactive season for the NLEB (November 1 – March 31), impacts to the bat would not be expected as a result of project activities.

Pitcher's thistle grows in sandy dune communities along the shores of the Great lakes. No suitable habitat for either species is present within the Project and no records of these species were identified in the EcoCAT report.

KBB require wild lupine (*Lupinus perennis*) for reproduction. Wild lupine is found in open prairies and grasslands on sandy soils, including roadsides. No sandy soils were observed and the Project area consists of cropland, woodland and wetlands. Therefore, suitable habitat for the KBB is not present, nor are any records of KBB documented in the Project vicinity based on the EcoCAT results.

Piping plover and red knot occupy a variety of open water habitats, including temporary waters, rivers, streams, lakes and Lake Michigan. Both species migrate through Illinois, but only the piping plover will rarely nest Illinois on the shore of Lake Michigan. No surface waters were identified in the project and therefore

Reference: **Loon Lake Solar Project – Federal and State Threatened/Endangered Resources Review**

suitable habitat for either species does not appear to be present. Additionally, the EcoCAT did not identify these species in the Project vicinity.

EPFO is found in high quality wet prairies, sedge meadows and fens. The wetlands within the Project are low-quality communities degraded by farming practices and invasive plant species, and therefore no not appear to be suitable habitat for EPFO. The EMR inhabits bogs, wet prairies and old fields. Marginal habitat for EMR may be present within the emergent wetland communities in the western portion of the Project area. However, the EcoCAT does not contain any records of EPFO or EMR in the vicinity of the Project. Furthermore, if wetland impacts were avoided during Project-related activities, impacts to these species (if present) would not be anticipated.

An experimental population of whooping cranes was established in the species' former range in Wisconsin and may stop over in Illinois during spring and fall migrations. Whooping cranes use a wide variety of wetland habitats for feeding and roosting, and cropland, pastures and hayfields can also be suitable for foraging. The emergent wetland and cropland portions of the Project Area may provide suitable foraging habitat and the whooping crane may only be present as a transitory migrant. This population is considered non-essential for the continued existence of the species and, for consultation purposes on private lands, is treated as proposed for listing and therefore does not require consultation under section 7 of the ESA. If a whooping crane is observed during construction, suspending ground-disturbing activities (e.g., grading, trenching) within a quarter mile of the whooping crane until the bird leaves the area is recommended.

The Migratory Bird Treaty Act (MBTA) implements a series of international treaties that provide for migratory bird protection. No migratory bird species are identified in the IPaC as potentially nesting within the Project; however, limiting clearing or grading activities to outside of the breeding season (similar dates to those above for the bats) would limit impacts to any breeding migratory birds that may be present and therefore maintain compliance with MBTA.

The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668) prohibits take and disturbance of individual eagles and their nests. Based on the field review and the EcoCAT, suitable nesting habitat was not observed and no eagle nests are documented within or near the Project area. Therefore, impacts to nesting bald eagles from the Project are not anticipated.

In conclusion, the Project would not likely impact state or federally-listed species, and therefore be in compliance with the Endangered Species Act of 1973, the state endangered species act, the MBTA and the BGEPA. This review of endangered resources was completed based on current regulations and the Project site conditions. The conclusions and guidance provided demonstrate compliance of the above-referenced endangered species regulations at both the state and federal level.

Stantec Consulting Services,

[redacted]

Abigail Medis
Environmental Scientist
Email: [redacted]
Phone [redacted]

Reference: **Loon Lake Solar Project – Federal and State Threatened/Endangered Resources Review**

Attachments:

A - IPac Species List
B - EcoCAT Report determination
C – IDNR Consultation Termination Letter
D – 'NLEB Technical Assistance Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Ecological Service Field Office
U.s. Fish And Wildlife Service Chicago Ecological Services Office
230 South Dearborn St., Suite 2938
Chicago, IL 60604-1507
Phone: (312) 485-9337

In Reply Refer To:
Project Code: 2023-0058423
Project Name: Loon Lake Solar

March 21, 2023

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

To Whom It May Concern:

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

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

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

Additionally, please note that on March 23, 2022, the Service published a proposal to reclassify the northern long-eared bat (NLEB) as endangered under the Endangered Species Act. The U.S. District Court for the District of Columbia has ordered the Service to complete a new final listing

determination for the NLEB by November 2022 (Case 1:15-cv-00477, March 1, 2021). The bat, currently listed as threatened, faces extinction due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across the continent. The proposed reclassification, if finalized, would remove the current 4(d) rule for the NLEB, as these rules may be applied only to threatened species. Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective (anticipated to occur by December 30, 2022). If your project may result in incidental take of NLEB after the new listing goes into effect this will first need to addressed in an updated consultation that includes an Incidental Take Statement. If your project may require re-initiation of consultation, please contact our office for additional guidance.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

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

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

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

recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

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

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Chicago Ecological Service Field Office
U.s. Fish And Wildlife Service Chicago Ecological Services Office
230 South Dearborn St., Suite 2938
Chicago, IL 60604-1507
(312) 485-9337

PROJECT SUMMARY

Project Code: 2023-0058423
Project Name: Loon Lake Solar
Project Type: Power Gen - Solar
Project Description: Community-scale solar development
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.45922905,-88.0880498432821,14z

Counties: Lake County, Illinois

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

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

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

---

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

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9045

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus*	Endangered

Population: [Great Lakes watershed DPS] - Great Lakes, watershed in States of IL, IN, MI, MN, NY, OH, PA, and WI and Canada (Ont.)
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/6039

Red Knot *Calidris canutus rufa*	Threatened

There is **proposed** critical habitat for this species.
Species profile: https://ecos.fws.gov/ecp/species/1864

INSECTS

NAME	STATUS
Karner Blue Butterfly *Lycaeides melissa samuelis*	Endangered
Monarch Butterfly *Danaus plexippus*	Candidate

There is **proposed** critical habitat for this species.
Species profile: https://ecos.fws.gov/ecp/species/6656

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

FLOWERING PLANTS

NAME	STATUS
Eastern Prairie Fringed Orchid *Platanthera leucophaea*	Threatened
Pitcher's Thistle *Cirsium pitcheri*	Threatened

No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- Follow the guidance provided at https://www.fws.gov/midwest/endangered/section7/s7process/plants/epfos7guide.html

Species profile: https://ecos.fws.gov/ecp/species/601

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8153

CRITICAL HABITATS

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

IPAC USER CONTACT INFORMATION

Agency: Stantec Consulting Services
Name: Abigail Medis
Address: 209 Commerce Parkway
City: Cottage Grove
State: WI
Zip: 53527
Email [redacted]
Phone:

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant: Stantec Consulting Services
Contact: Abigail Medis
Address: 209 Commerce Parkway
Cottage Grove, WI 53527

Project: Loon Lake
Address: N. Lake Street, Antioch

IDNR Project Number: 2312105
Date: 03/21/2023

Description: Community-scale solar development

Natural Resource Review Results

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

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Little Silver Lake INAI Site
Loon Lake INAI Site
Sun Lake INAI Site
Sun Lake Nature Preserve
Black Tern *(Chlidonias niger)*
Blackchin Shiner *(Notropis heterodon)*
Blacknose Shiner *(Notropis heterolepis)*
Grass-Leaved Pondweed *(Potamogeton gramineus)*
King Rail *(Rallus elegans)*
Least Bittern *(Ixobrychus exilis)*
Pugnose Shiner *(Notropis anogenus)*
Starhead Topminnow *(Fundulus dispar)*
Western Banded Killifish *(Fundulus diaphanus menona)*
White-Stemmed Pondweed *(Potamogeton praelongus)*

Wetland Review (Part 1090)

The Illinois Wetlands Inventory shows wetlands within 250 feet of the project location.

An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.

Location

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

County: Lake

Township, Range, Section:
46N, 10E, 17
46N, 10E, 20

IL Department of Natural Resources
Contact
Adam Rawe
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Storm water
1021 North Grand Ave. East
P.O. Box 19276
Springfield, Illinois 62794

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.

Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

JB Pritzker, Governor
Natalie Phelps Finnie, Director

March 24, 2023

Abigail Medis
Stantec Consulting Services
209 Commerce Parkway
Cottage Grove, WI 53527

RE: Loon Lake
Project Number(s): 2312105
County: Lake

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 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. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, 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, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Adam Rawe
Division of Ecosystems and Environment
217-785-5500

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chicago Ecological Service Field Office
U.s. Fish And Wildlife Service Chicago Ecological Services Office
230 South Dearborn St., Suite 2938
Chicago, IL 60604-1507
Phone: (312) 485-9337

In Reply Refer To:
Project code: 2023-0058423
Project Name: Loon Lake Solar

June 01, 2023

Federal Nexus: no
Federal Action Agency (if applicable): Illinois Environmental Protection Agency

Subject: Technical assistance for 'Loon Lake Solar'

Dear Abigail Medis:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on June 01, 2023, for 'Loon Lake Solar' (here forward, Project). This project has been assigned Project Code 2023-0058423 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Other Species and Critical Habitat that May be Present in the Action Area

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

- Eastern Prairie Fringed Orchid *Platanthera leucophaea* Threatened
- Karner Blue Butterfly *Lycaeides melissa samuelis* Endangered
- Monarch Butterfly *Danaus plexippus* Candidate
- Piping Plover *Charadrius melodus* Endangered
- Pitcher's Thistle *Cirsium pitcheri* Threatened
- Red Knot *Calidris canutus rufa* Threatened
- Whooping Crane *Grus americana* Experimental Population, Non-Essential

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species and/or critical habitat listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Coordination with the Service is complete. This letter serves as technical assistance. All conservation measures should be implemented as proposed. Thank you for considering federally listed species during your project planning.

We are uncertain where the northern long-eared bat occurs on the landscape outside of known locations. Because of the steep declines in the species and vast amount of available and suitable forest habitat, the presence of suitable forest habitat alone is a far less reliable predictor of their presence. Based on the best available information, most suitable habitat is now expected to be unoccupied. During the interim period, while we are working on potential methods to address this uncertainty, we conclude take is not reasonably certain to occur in areas of suitable habitat where presence has not been documented.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the Chicago Ecological Service Field Office and reference Project Code 2023-0058423 associated with this Project.

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

1. Name

Loon Lake Solar

2. Description

The following description was provided for the project 'Loon Lake Solar':

> Community-scale solar development

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.45922905,-88.0880498432821,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

   Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: Stantec Consulting Services
Name: Abigail Medis
Address: 209 Commerce Parkway
City: Cottage Grove
State: WI
Zip: 53527
Email [redacted]
Phone:

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Illinois Environmental Protection Agency

ATTACHMENT N

Cultural Resources Report and SHPO Correspondence

Stantec Consulting Services Inc.
350 North Orleans Street, Suite 1301
Chicago IL 60654-1983

April 7, 2023

Project/File: 193806152

Rita Baker
One Natural Resources Way
Springfield, Illinois 62702

Dear Rita Baker,

Reference: Preliminary Project Review for the Proposed Loon Lake Solar Project, Lake County, Illinois.

On behalf of Nexamp, Stantec Consulting Services Inc. (Stantec) is requesting preliminary project review of the proposed Loon Lake Solar Project (Project) located near the village of Antioch, Lake County, Illinois (Figure 1). More specifically, the Project is located on approximately 43.81 acres of privately owned land (the Project area) within Township 34 North, Range 13 East, Section 27. Land use within the Project area consists of agricultural cultivation. The predominant soil complexes are Muskego-Lena-Houghton and Morley-Markham-Beecher-Ashkum (Figure 2).

While engineering designs and specifications for the Project are still in the initial stages, the Project proposes the development of a photovoltaic solar project at this location and will require a permit from the Illinois Environmental Protection Agency which will trigger review by your office under Section 707 of the Illinois State Agency Historic Resources Preservation Act (Public Act 86-707; 20 ILCS 3420). At this point, the need for federal permitting has not been determined. If the Project becomes a federal undertaking, consultation with your office under Section 106 of the National Historic Preservation Act will be conducted by the lead federal agency at that time.

To support review of the Project, Stantec conducted a review of the Illinois Historic Resources Geographic Information System (HARGIS) and the Illinois Inventory of Archaeological Sites (IAS) to identify cultural resources recorded within the Project area and a 1-mile buffer surrounding the Project area. The HARGIS database has no records of historical structures in the Project area. HARGIS records include six structures within the 1-mile buffer of the Project area. All six structures are recorded as *undetermined* for inclusion in the National Register of Historic Places (NRHP). However, the closest of these structures is over 0.43 miles from the Project area and the Project will not directly impact these structures.

The IAS database also has no records of archaeological sites or cemeteries within the Project area. Nine archaeological sites are recorded in the IAS within 1-mile of the Project area (Figure 3) (Table 1). All nine of the sites have been determined *not eligible* for listing in the NRHP. The IAS database includes records for three archaeological surveys that have been conducted within the Project Area (9091, 5463, 9750). These three surveys covered most of the Project Area. Survey number 5463 was conducted by Midwest Archaeological Research Services (MARS) in 1993, Survey number 9750 was conducted by the University of Illinois at Urbana-Champaign in 1999, and survey number 9091 was conducted by the Archaeology Research Institute in 1998. These three surveys encompass approximately 34.80 acres of the 38.60-acre Project Area. The three

Reference: Preliminary Project Review for the Proposed Loon Lake Solar Project, Lake County, Illinois.

surveys did not identify cultural resources within the Project Area. A further six archaeological surveys have been recorded in IAS records within the 1-mile buffer of the Project area. These surveys uncovered the archaeological sites within the 1-mile buffer.

The Illinois Resource Potential layer (Figure 3) available in the IAS indicates that the Project area is outside of areas considered by Illinois state law (20 ILCS 3420) as having a high archaeological site potential. Additionally, the Illinois Archaeological Probability Model (IAPM) depicts the Project area as low and medium-low probability for archaeological sites (Figure 4).

Maps depicting the Project location, soils of the Project area, results of a cultural resources desktop review, and the IAPM are attached for your reference.

The database review resulted in the recommendation that the Project area has a low probability for the presence of archaeological sites. Additionally, recorded archaeological sites, historic structures, or cemeteries are not present within the Project area. The Project area has also been extensively surveyed by three previous surveys which did not identify archaeological sites. Therefore, Stantec requests your concurrence with our recommendation that additional cultural resources investigations would not be necessary for the Project and that the Project be allowed to proceed as planned.

Best regards,

STANTEC CONSULTING SERVICES INC.

Wpridden

William Pridden
Archaeologist
[redacted]

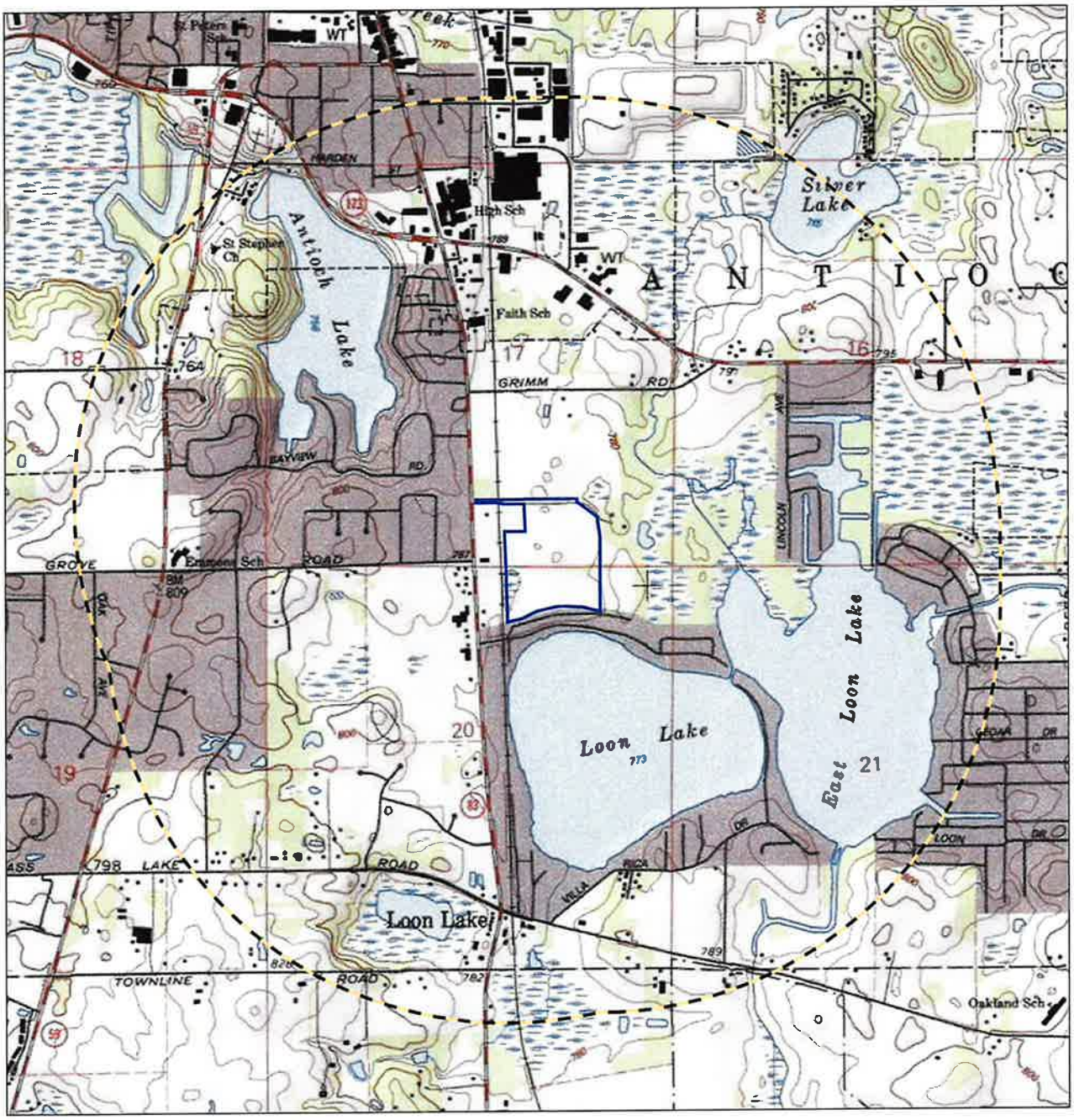
Attachment: Table 1: Archaeological Sites

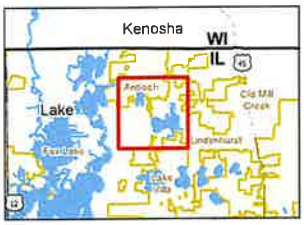
Figure 1: Project Location and Topography

Figure 2: NRCS Soil Survey Data

Figure 3: Cultural Resources

Figure 4: IAPM Probability





Legend
- Project Boundary
- 1-Mile Buffer

0 1,000 2,000 Feet
(At original document size of 8.5x11)
1:24,000

N

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS
3. Background: USGS 7.5' Topographic Quadrangle

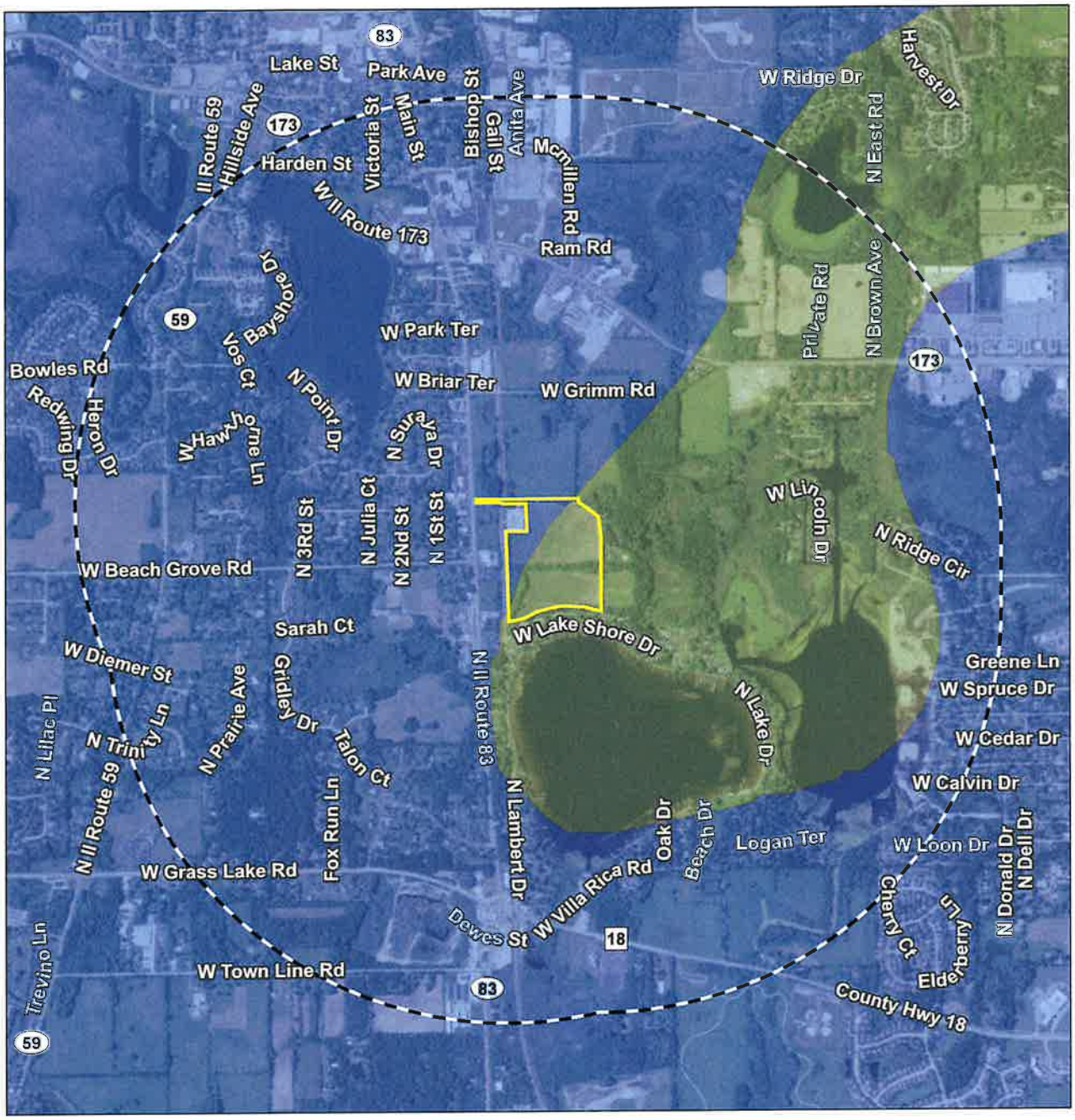
Stantec

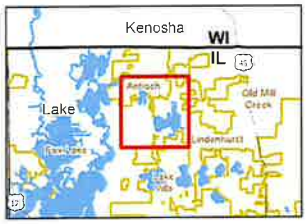
Project Location	Prepared by MZ on 2023-04-05
T46N, R10E, S17 & S20	TR by JM on 2023-04-06
Lake Co., Illinois	IR by WP on 2023-04-07

Client/Project 193806152
Nexamp, Inc.
Loon Lake Solar Project
Cultural Report

Figure No.
1

Title
Project Location and Topography





Legend

- Project Boundary
- 1-Mile Buffer

Generalized Soil Survey

- Morley-Markham-Beecher-Ashkum (s2277)
- Muskego-Lena-Houghton (s2262)

0 1,000 2,000 Feet

(At original document size of 8.5x11)
1:24,000

N

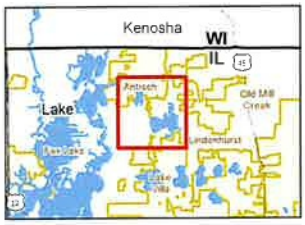
Notes

1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS, SHPO, NRCS
3. Background: NAIP 2021

Stantec

Project Location	Prepared by MZ on 2023-04-05
T46N, R10E, S17 & S20	TR by JS on 2023-04-05
Lake Co., Illinois	IR by WP on 2023-04-07
Client/Project	193806152
Nexamp, Inc.	
Loon Lake Solar Project	
Cultural Report	
Figure No.	
2	
Title	
NRCS Soil Survey Data	

[redacted]



Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS, SHPO, IAS
3. Background: NAIP 2021

Legend
- Project Boundary
- 1-Mile Buffer
- Previously Recorded Archaeological Site
- Previous Survey
- Archaeological Resource Potential

0 1,000 2,000 Feet
(At original document size of 8.5x11)
1:24,000

N

Stantec

Project Location
T4EN, R10E, S17 & S20
Lake Co., Illinois

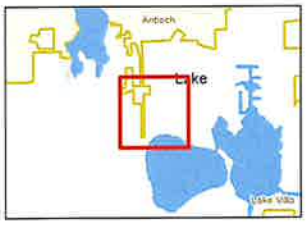
Prepared by MZ on 2023-04-05
TR by JM on 2023-04-06
IR by WP on 2023-04-07

Client/Project
193806152
Nexamp, Inc.
Loon Lake Solar Project
Cultural Report

Figure No.
3

CONFIDENTIAL

Title
Cultural Resources



Legend

- Project Boundary

IAPM Probability

- High (> 0.75)*
- Med-High (0.5-0.75)*
- Med-Low (0.25-0.5)
- Low (< 0.25)

0 200 400 Feet

(At original document size of 8.5x11)
1:4,800

N

Stantec

Project Location	Prepared by MZ on 2023-04-05
T46N, R10E, S17 & S20	TR by JM on 2023-04-06
Lake Co., Illinois	IR by WP on 2023-04-07

Client/Project 193806152
Nexamp, Inc.
Loon Lake Solar Project
Cultural Report

Figure No.
4

Title
Illinois Archaeological Predictive Model (IAPM)

Notes
1. Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet
2. Data Sources: Stantec, Nexamp, Inc., Esri, NADS, USGS, SHPO, ISAS
3. Background: NAIP 2021

*No Features Within Data Frame

Illinois Department of Natural Resources

JB Pritzker, Governor • Natalie Phelps Finnie, Director
One Natural Resources Way • Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Lake County PLEASE REFER TO: SHPO LOG #003041123
Antioch
NE of W. Lake Shore Dr. & N. IL Route 83, Section:27-Township:34N-Range:13E
IEPA, Stantec-193806152
New construction, solar development - Loon Lake Solar Project

April 26, 2023

William Pridden
Stantec Consulting Services, Inc.
350 North Orleans Street, Suite 1301
Chicago, IL 60654-1983

Dear Mr. Pridden:

The Illinois State Historic Preservation Office is required by the Illinois State Agency Historic Resources Preservation Act (20 ILCS 3420, as amended, 17 IAC 4180) to review all state undertakings for their effect on cultural resources. Pursuant to this requirement, we have received information regarding the above referenced project for our comment.

According to the information provided concerning the proposed project, apparently there is no federal involvement in your project. However, please note that the state law is less restrictive than the federal cultural resource laws concerning archaeology. If your project will use federal loans or grants, need federal agency permits, use federal property, or involve assistance from a federal agency, then your project must be reviewed under the National Historic Preservation Act of 1966, as amended. Please notify us immediately if such is the case.

Our files do not identify any known historic properties within this proposed project area, nor is the project area within the high probability area for archaeological resources as defined in the state Act. Accordingly, this project is EXEMPT pursuant to the Illinois State Agency Historic Resources Preservation Act (20 ILCS 3420/6). An archaeological survey for your above referenced project is not required under STATE law.

If further assistance is needed please contact Jeff Kruchten, Chief Archaeologist at 217/785-1279 or Jeffery.kruchten@illinois.gov.

Sincerely,

Carey L. Mayer

Carey L. Mayer , AIA
Deputy State Historic
Preservation Officer

ATTACHMENT O

Executed AIMA Agreement

STANDARD AGRICULTURAL IMPACT MITIGATION AGREEMENT
between
Loon Lake Solar, LLC

and the
ILLINOIS DEPARTMENT OF AGRICULTURE
Pertaining to the Construction of a Commercial Solar Energy Facility
in
Lake 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).

Loon Lake 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 Lake County [GPS Coordinates: 42.460281, -88.088010], which will consist of up to 38 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 Loon Lake 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 Lake County within the State of Illinois.

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

STATE OF ILLINOIS
DEPARTMENT OF AGRICULTURE

By: Jerry Costello II, Director

By Tess Peagans, General Counsel

801 E. Sangamon Avenue, 62702
State Fairgrounds, POB 19281 Springfield,
IL 62794-9281

August 24, 2023

Loon Lake Solar, LLC

[redacted]

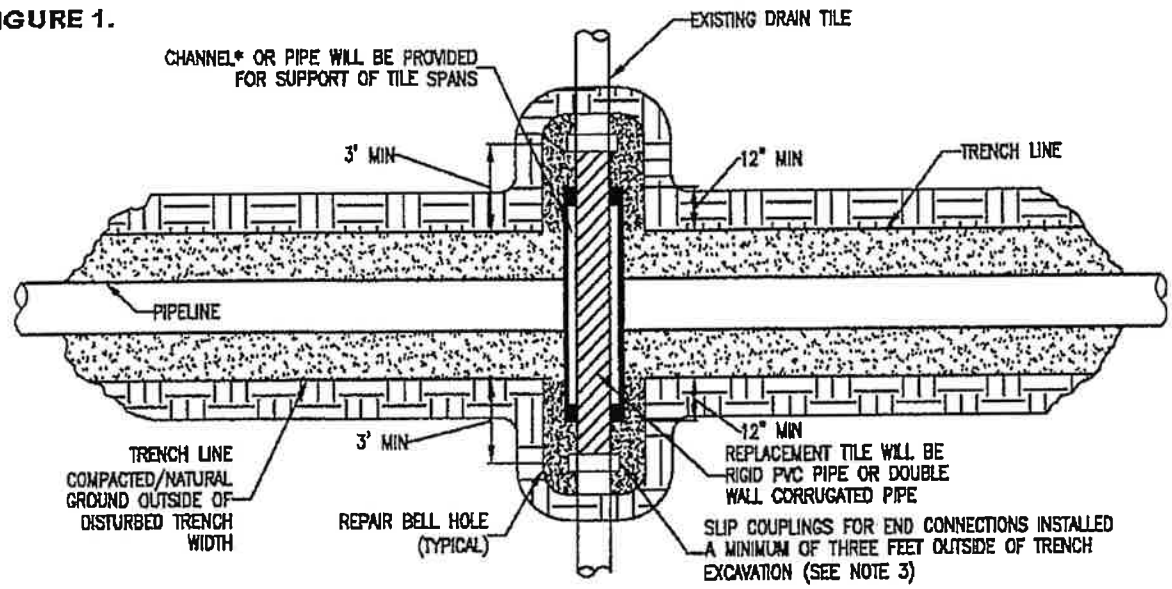
By Christopher F. Clark, SVP

101 N Wacker Drive, Suite 200
Chicago, IL 60606

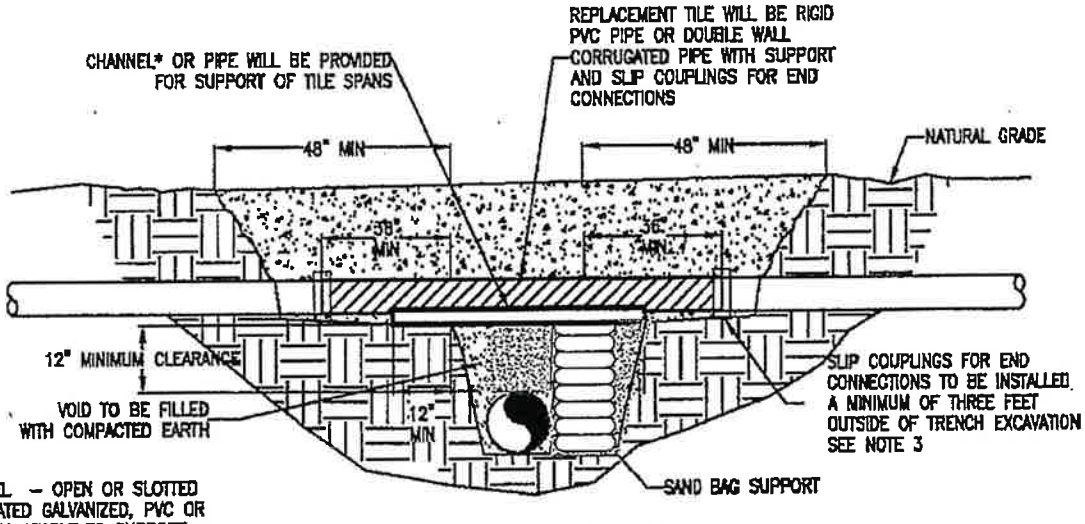
Address

July 1, 2023

FIGURE 1.



PLAN
N.T.S.



*CHANNEL – OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE TO SUPPORT DRAIN TILE.

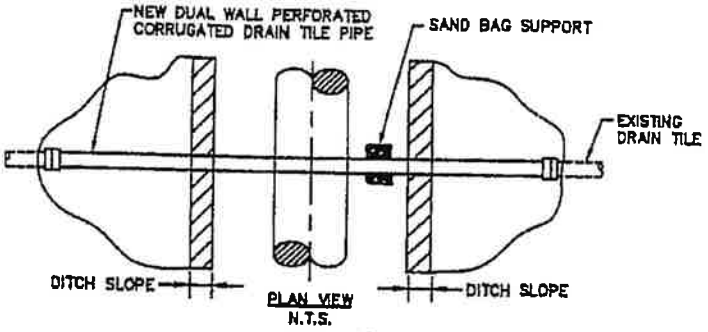
CROSS SECTION
N.T.S.

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.

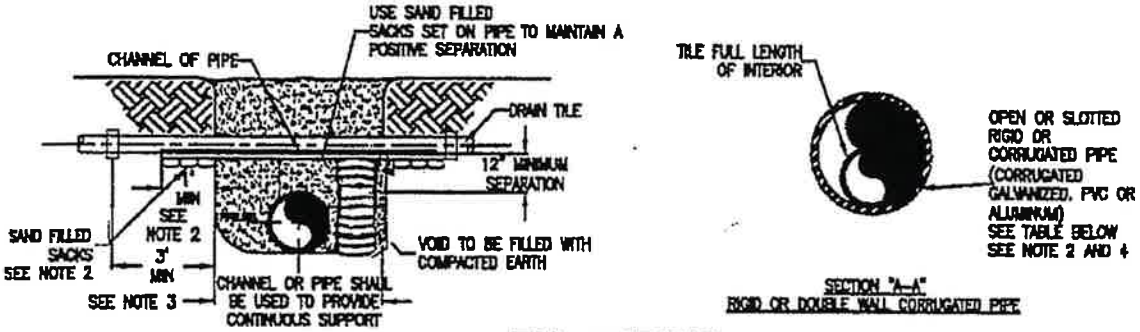
TEMPORARY DRAIN TILE REPAIR

FIGURE 2.



PLAN VIEW
N.T.S.

PLAN VIEW



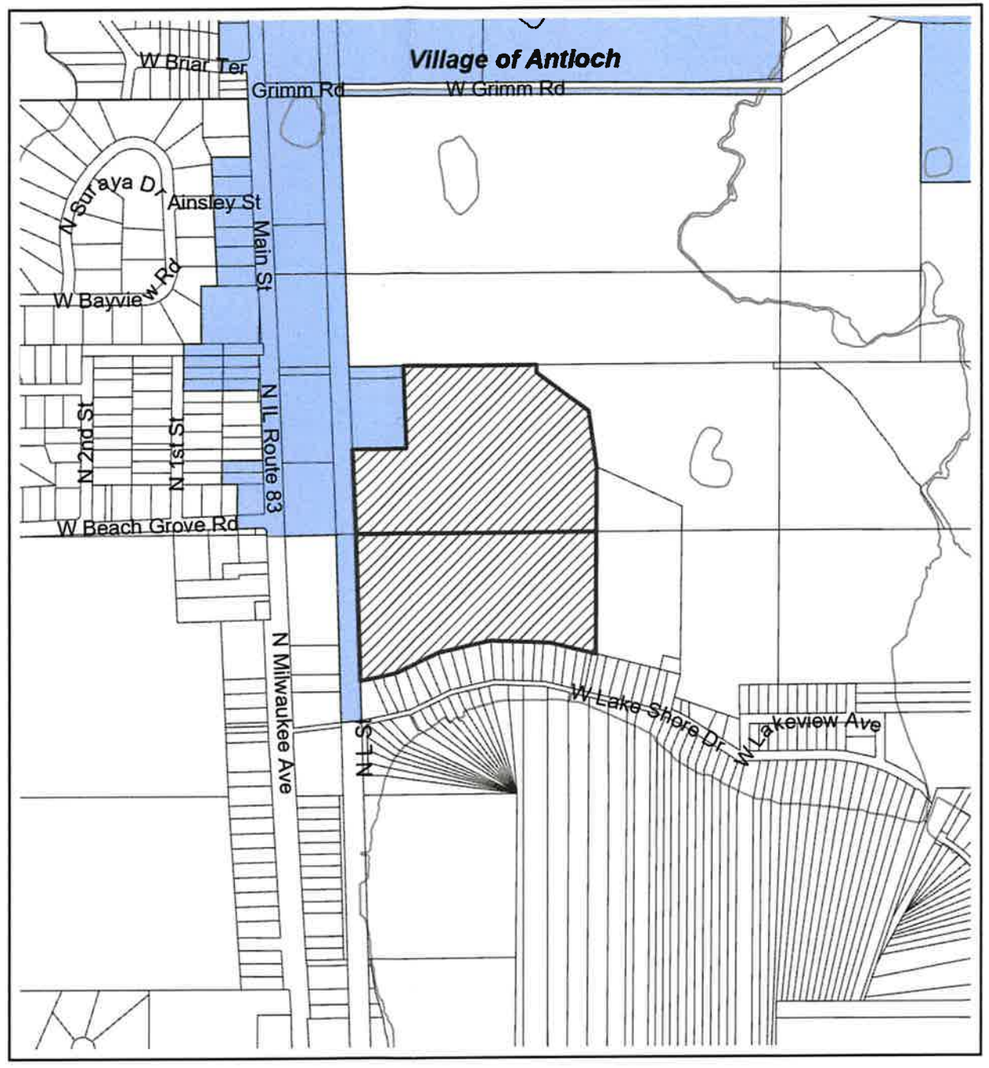
END VIEWS

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.
6"-8"	7" @ 9.8 #/ft	8"-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

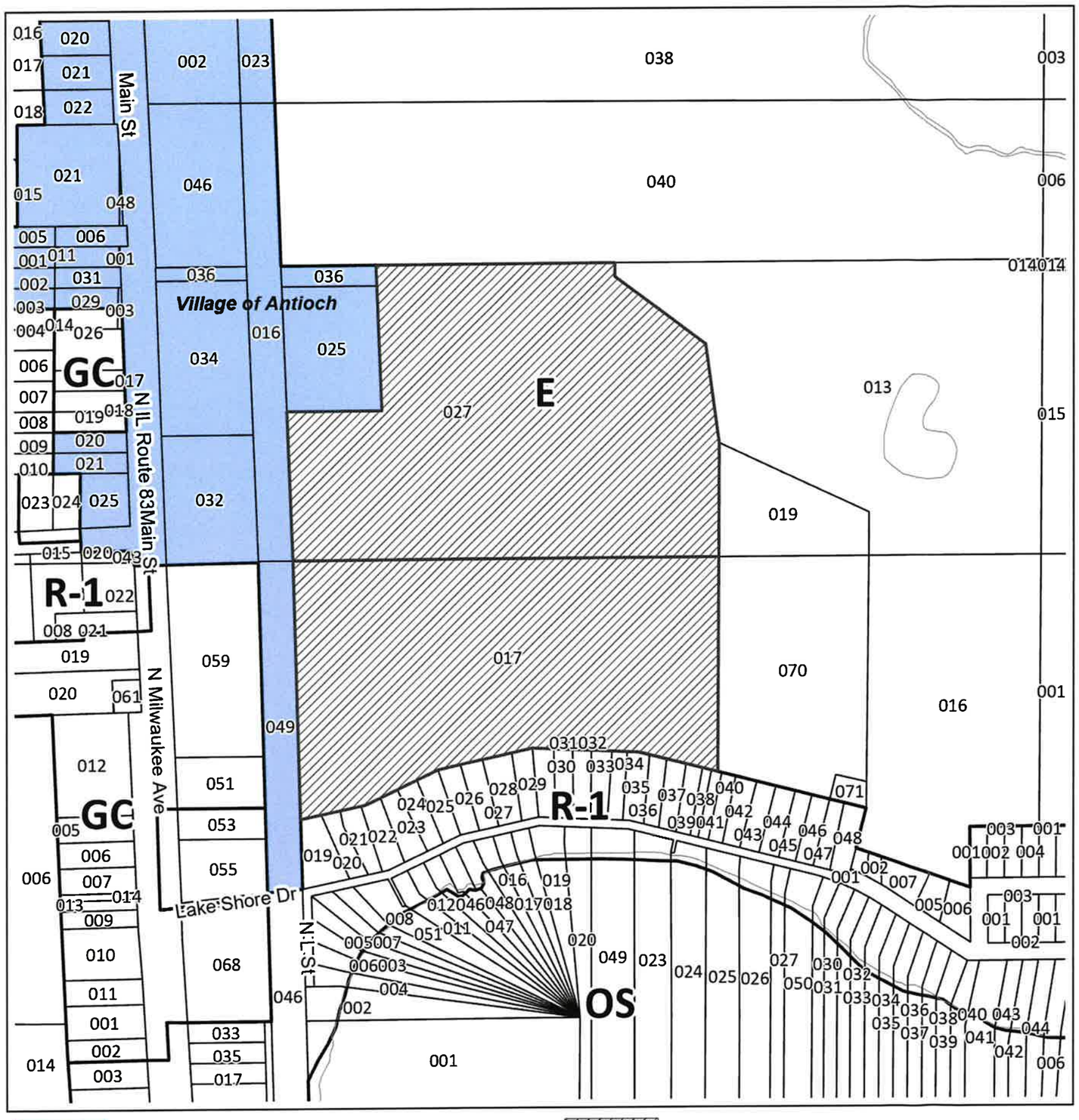


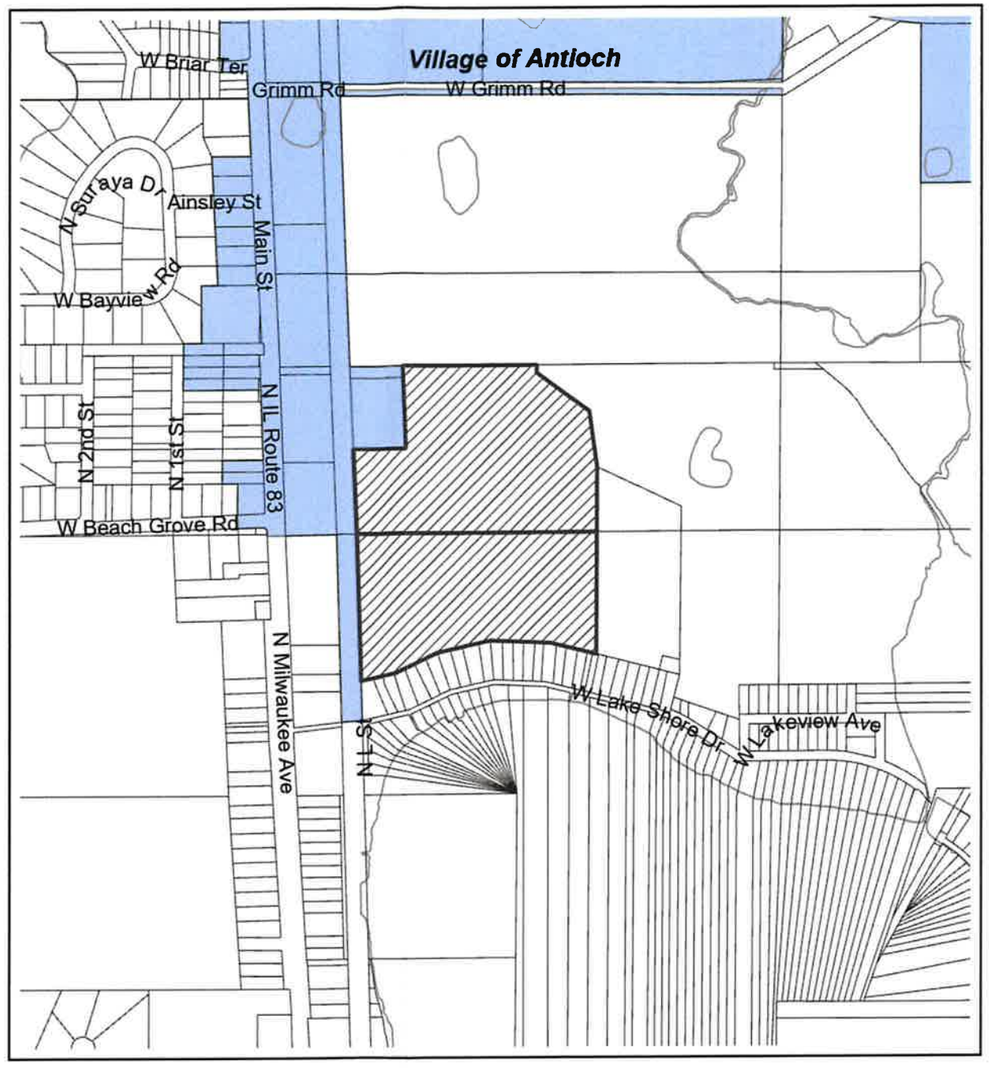
Incorporated Lake County

Subject Parcel

Zoning Board of Appeals
Case #CUP-000998-2024

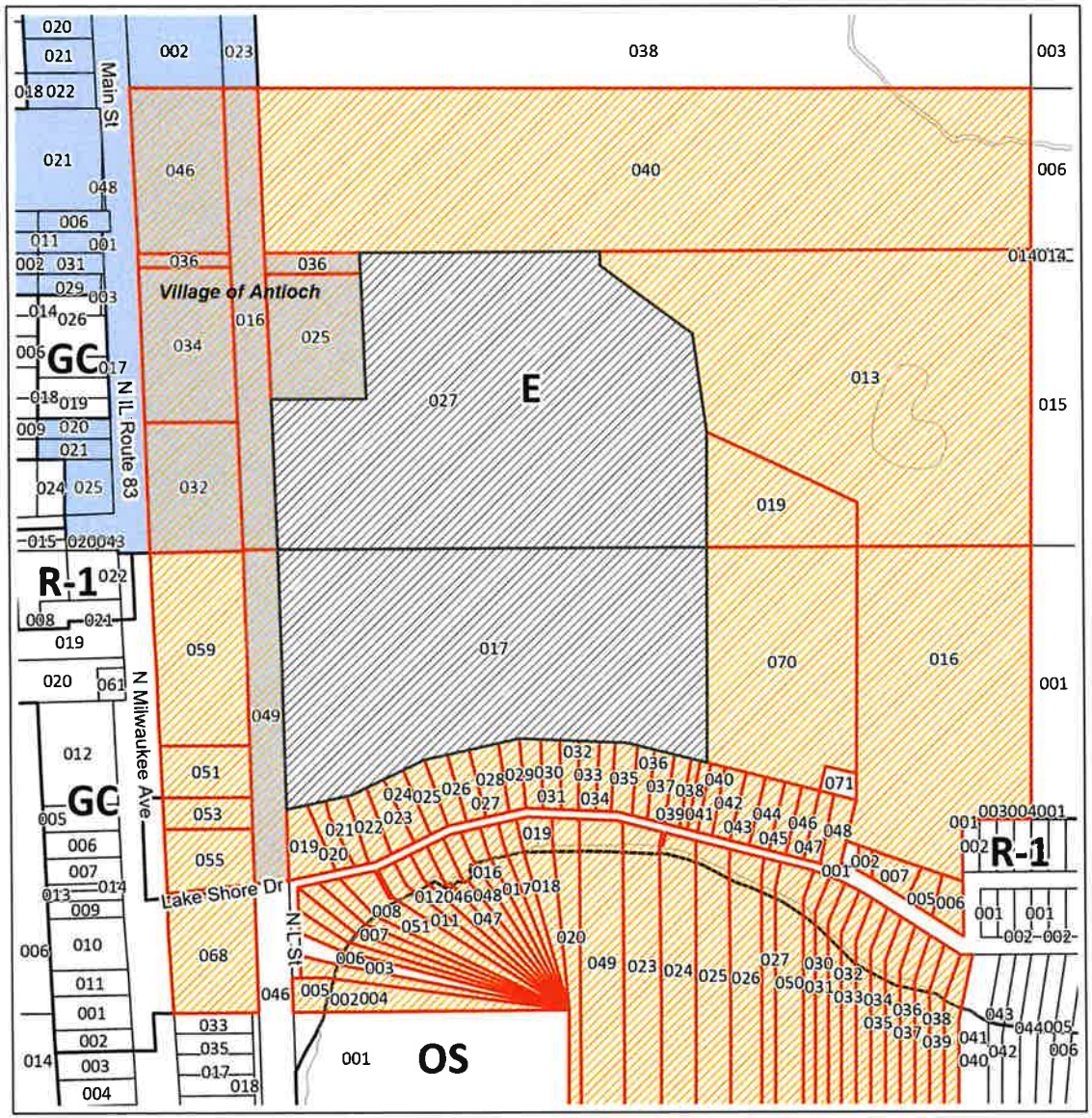
0 90 180 360 540 720
Feet

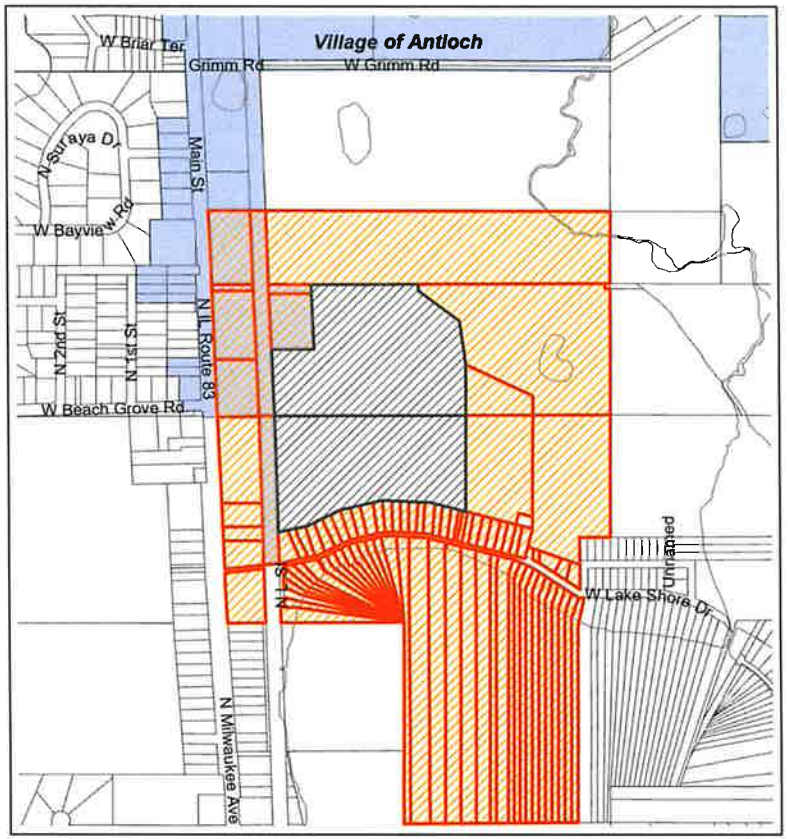




Zoning Board of Appeals
Case #CUP-000998-2024

0 90 180 360 540 720
Feet





Zoning Board of Appeals
Case #CUP-000998-2024

Incorporated Lake County | Subject Parcel | Mailing Parcel

0 90 180 360 540 720 Feet