

LIVINGSTON COUNTY REGIONAL PLANNING COMMISSION
LIVINGSTON COUNTY HISTORIC COURTHOUSE,
112 W. Madison St., Pontiac, Illinois 61764

APPLICANT FILING PROCEDURES FOR SPECIAL USES

1. Complete the original application and any required attachments. Attachments are considered a part of the application.
2. File the application in the office of the Livingston County Regional Planning Commission, accompanied with the required fee. The Commission shall assign a case number to the application.
3. All fees shall be payable to the General Fund of Livingston County. (The required fee is \$175.00).
4. The Livingston County Regional Planning Commission will transmit one copy of the application with the assigned case number noted on same to the Livingston County Soil and Water Conservation, Route 1, Box 199, Pontiac, IL 61764.
5. The Livingston County Soil & Water Conservation District shall forward the NOTICE OF TRANSMITTAL, as provided, to the Zoning Administrator, Livingston County Historic Courthouse, 112 W. Madison St., Pontiac, IL 61764.
6. The Livingston County Regional Planning Commission shall advertise the notice of public hearing for each case to be held before the Board of Appeals.
7. The Livingston County Regional Planning Commission shall serve notice to the applicant and owners or occupants of property abutting the affected area not less than five (5) days prior to the hearing advising the location and nature of the subject matter contained in the application and the date, time and place of the hearing.
8. The applicant shall be billed by the Livingston County Regional Planning Commission for the cost of the required notice of public hearing. No final action shall be taken on any case until the cost of advertising the required notice of public hearing has been paid.

You may refer to the sheet that is part of the application package that refers to the example of fees that provides you with more information on the potential costs of proceeding with this property development.

-----DETACH HERE-----

NOTICE OF TRANSMITTAL

Forward to:

Zoning Administrator
Livingston County Historic Courthouse
112 W. Madison St.
Pontiac, Illinois 61764

A copy of the application and attachments for a (zoning map amendment, special use) Case No. _____ was transmitted to the Livingston County Soil and Water Conservation District on _____.

Signature of Receiver

LIVINGSTON COUNTY REGIONAL PLANNING COMMISSION
LIVINGSTON COUNTY HISTORIC COURTHOUSE, 112 W. MADISON ST., PONTIAC, IL 61764

APPLICATION FOR SPECIAL USE – LIVINGSTON COUNTY ZONING ORDINANCE

Applicant
Name USS Man Solar LLC
Address 875 N. Michigan Ave., Fl 31
Chicago, IL 60610
Phone (874) 400-7156

Property Owner(s)
Name Michelle Proksa
Address 1308 Van Buren
Streator, IL 61364
Phone 815-674-6952

(attach list if necessary)

Legal description of property: See attached.

Street address: E 3000 N RD, Manville, IL 61319

Property interest of applicant: Proposing to develop, construct and operate a community solar garden

Present Use: Agriculture

Zoning District: _____

A special use is requested to allow the property described above to be used as: _____

Develop, construct and operate a community solar garden

Yes No A previous special use has not been requested with respect to the described property.

☒ Yes No A previous special use was requested with respect to the described property. Such previous
special use request was made on August, 2022 and Denied
Date Year Granted or Denied

Attachment No. 1 – Submit a map drawn to scale (as required by the Zoning Administrator) of the area included in the application and the abutting area within 200 feet (additional area may be required by the Zoning Administrator) showing the zoning classification; dimensions and use of all buildings and/or structures (existing and proposed); driveways; parking areas; right-of-way lines for streets and roads; easements; provision for surface drainage; proposals for sewage disposal systems; distance of building(s) and/or structure(s) from front, side and rear property lines; and distance of building(s) and/or structure(s) from center of public access road(s).

Additional Attachments – Submit additional attachments as required by the Zoning Administrator.

I (we) certify that all of the information presented above is true to the best of my (our) knowledge and belief.

August 24, 2023

Applicant(s) Signature

Date

STATEMENT OF APPLICANT – OWNER STATUS

APPLICANT USS Man Solar LLC

OWNERS - Michelle Proksa

Individual (s)

Alter ego or representative of individual (s)

(List the name (s) and address (es) of the actual and true principal)

Corporation

(List the names and addresses of all officers and directors and identify by title; also list the names and addresses of all stockholders and shareholders owning an interest in excess of 20% of all outstanding stock)

Business or entity doing business under an assumed name

(List the names and addresses of all true and actual owners)

Partnership

(List the names and addresses of all partners)

Joint Venture

(List the names and addresses of all joint venturers)

Syndicate

(List the names and addresses of all syndicate members)

Unincorporated Voluntary Association

(List the names and addresses of all members)

LIST OF NAMES AND ADDRESSES REQUIRED ABOVE

APPLICATION EXPLANATION

Project Name: USS Man Solar LLC

Requested Zoning: Agriculture

Explanation and description of request or project:

USS Man Solar LLC is requesting a Special Use Permit (SUP) to develop, construct and operate a 1community solar garden located in Livingston County on parcel 02-02-15-300-008.



USS MAN SOLAR LLC
SPECIAL USE PERMIT APPLICATION
AUGUST 17, 2023



COVER LETTER

August 17, 2023
Livingston County Planning Advisory Commission
112 W. Madison Street
Pontiac, IL 61764

RE: Application by USS Man Solar LLC for a Special Use Permit to Construct and Operate a Community Solar Garden

Dear Livingston County Planning Advisory Commission,

Attached, please find an application for a Special Use Permit ("SUP") to construct and operate a community solar garden within Livingston County. Pursuant to the Livingston County Ordinance Article VIII-B, the request is being made by USS Man Solar LLC, a subsidiary of United States Solar Corporation ("US Solar"). US Solar, a developer/owner/operator based in the Midwest, seeks to make the benefits of solar more accessible. We coordinate all Project details— site acquisition, development, interconnection, permitting, finance, construction, operations, and maintenance.

USS Man Solar LLC plans to develop and construct a 1.998-megawatt (MWac) community solar garden (the "Solar Garden") in Livingston County on approximately 10.52 acres of parcel 02-02-15-300-008, at approximately E 3000 N Rd, Manville, IL 61319 (the "Property"), through Livingston County County's SUP process. Our application includes information about the site and provides detailed analysis of the applicable land use permitting considerations. You will also find information about the residents, schools, cities, and businesses who subscribe to these Solar Gardens and the local benefits to the economy and environment.

The US Solar team appreciates the coordination and insights already provided by the Livingston County staff and neighboring residents. Together, we will ensure that this Solar Garden will operate safely and efficiently over its lifespan, while providing environmental, financial, and social benefits to the surrounding area.

Please contact us with any questions, comments, or points for clarification. We look forward to working with the Commission on this Solar Garden.

Sincerely,



Ryan Magnoni – Project Developer

USS Man Solar LLC
100 N 6th St., Suite 410B
Minneapolis, MN 55403
W: (847) 400.7156
E: ryan.magnoni@us-solar.com

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SOLAR GARDEN SUMMARY

USS Man Solar LLC respectfully submits this SUP application to construct, own, and operate a community solar garden (the “Solar Garden”).

Parcel Identification Number	02-02-15-300-008
Site Address	E 3000 N Rd, Manville, IL 61319
Project Capacity	1.998 MWac
Project Acreage	10.52
Site Control Status	Memorandum recorded, see Appendix II
Landowner	Michelle Proksa
County	Livingston
Proposed County Date	8/21/2023
Current Use of Property	Agriculture

SELECTING THIS PROPERTY

The Property was selected because of its solar resources, physical characteristics, proximity to sufficient distribution facilities, ability to meet all local permitting requirements, and of course, landowner support.

- Solar Resource
 - Relatively large, flat, and open to provide unobstructed access to natural sunlight
- Physical Characteristics
 - Limited grading, if any, maintaining natural topsoil and existing drainage patterns
 - Not in Agricultural Preserve
 - No impact to wetlands or neighboring properties
 - Adequate space for setbacks or landscape screening
 - Soils capable of supporting facility and equipment
 - No water improvements needed
 - Limited infrastructure improvements needed
- Proximity to Sufficient Distribution Facilities
 - Existing distribution line on E. 3000 N. Rd
 - Adequate capacity for the Solar Garden on existing distribution line and other infrastructure
 - Supplies electricity throughout the local community
 - Existing substation in relatively close proximity with adequate available capacity for the Solar Garden, according to Capacity Screens provided by Commonwealth Edison
- Ability to meet all local permitting requirements
- Landowner support

PREVIOUS COUNTY MEETINGS

In August 2022, USS Man Solar LLC, a 3.998MWac project, was submitted to Livingston County for a Special Use Permit. USS Man Solar LLC had been in discussion with the two nearby residences for months, vetting questions and concerns with the project. We learned a lot through those meetings and through the Livingston County Board process. The project did receive a favorable recommendation from the Zoning Board and ultimately didn't receive approval from the County Board last year.

USS Man Solar LLC went back to the drawing board internally and with the landowner, but also with the concerns brought to us by the two residents and the county board members. USS Man Solar LLC is here to submit a re-envisioned plan. With strong support from the landowner, and working with the nearby residents, USS Man Solar LLC is resubmitting this project for a Special Use Permit with Livingston County. The biggest change is that the project was reduced by 50% and situated where there would be the least amount of impact while still providing the most benefits. We hope this project will ultimately be approved and allow residents of Livingston County to be able to benefit from a renewable energy resource.

LOCAL IMPACT

ENVIRONMENTAL

The area underneath the modules and between rows will be transformed into a diverse mix of pollinator-friendly, low-lying, deep-rooted plants. This enhances soil, water, and air quality. A study has shown that these seed mixes reduce stormwater runoff by 23 percent for the 2-year storm event (3.1 inches of rain) and 8 percent for the 100-year storm event (7.4 inches of rain). These native plantings also expand habitat for pollinators and other species that increase crop yields and improve the local environment.

Beyond the local environment, there is also a measurable impact to the global environment by producing clean energy. The Solar Garden would provide decades of pollution-free and greenhouse-gas-free electrical generation.

ECONOMIC

US Solar is a leading provider of community solar solutions to residents, businesses, and public entities across the nation, in states such as Illinois, Minnesota, Colorado, Connecticut, Delaware, Maine, New Mexico, New York, etc. We are proud to work with over 100 commercial customers and ~3,000 residential customers across the United States. Our subscribers get the opportunity to save money on their monthly electric bill through Commonwealth Edison's community solar program. Commonwealth Edison customers in Livingston County may subscribe to a portion of the electricity generated and receive bill credits on their Commonwealth Edison bills. In this way, local residents and businesses receive a direct economic benefit from the Solar Garden.

In addition to the subscriptions, here are some local economic impacts:

Already Spent

- ~\$500 on travel, meals, legal fees, and county recordings
- ~\$15,000 on engineering, legal, and environmental consulting services

During Construction

- ~\$6,000,000 on capital infrastructure investment
- ~\$5,000 on local spending
- 15+ temporary construction and related service jobs, equivalent to ~4 full-time job years

During Operation

- ~\$12,000 - \$16,000 on increased property tax payments during operation

ELECTRICAL

The Solar Garden will generate enough clean electricity to power approximately 450 homes annually. Because the Solar Garden will interconnect to the existing distribution system of Commonwealth Edison, the clean energy will be used by nearby electric customers. This Solar Garden will also contribute to energy independence, decreasing our reliance on importing energy. USS Man Solar LLC is contracted to deliver electricity for a minimum period of 20 years, commencing on the date of commercial operation, which is expected to occur by Q4 2025.

VISUAL IMPACT

OVERVIEW

The surrounding land use is primarily agricultural, with some farmsteads within a half mile of the Solar Garden. Currently, the relevant area of the parcel is 100% row crop agriculture. The Solar Garden is composed of single-axis trackers, which means the panels rotate from east to west as the sun rises and sets. The panels are about 6'-8' tall, depending on the tilt angle which varies throughout the day. Each row of solar panels is approximately 20' apart, and the entire Solar Garden area is planted in a mix of native grasses and pollinator-friendly habitat. There are no permanent structures or buildings.

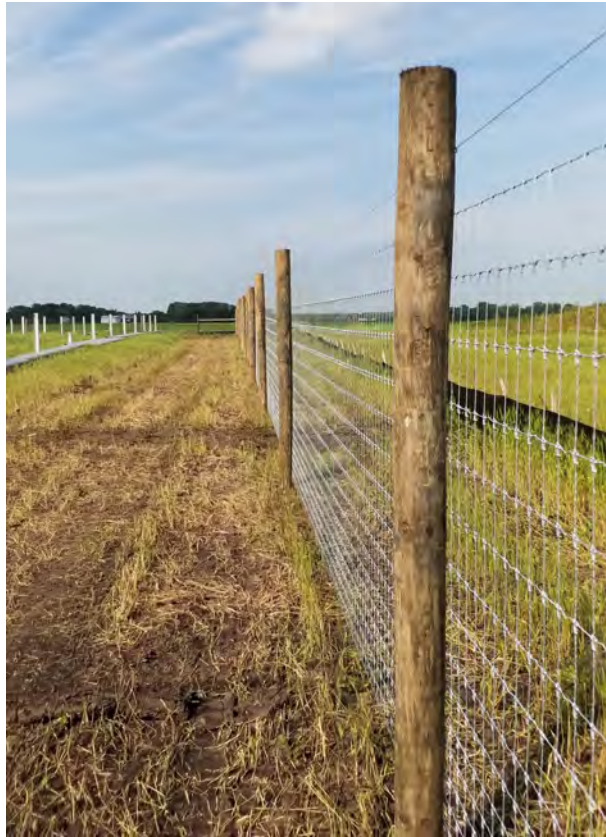
PHOTOS OF THE SITE



Street view of the Solar Garden site, looking west on E. 3000 N. Rd.

FENCE

Our Solar Garden will include a security fence around the entire perimeter, as required by the National Electric Code. The security fencing will be located entirely on the Property. The fence will be no less than 6 feet and will not exceed 8 feet in height. It will be a farm-field style fence, see the image below for a representative photo taken of a Solar Garden under construction.



VEGETATIVE SEEDING PLAN & LIVING BUFFER

As mentioned in the LOCAL IMPACT section, the area underneath the modules and between rows will be transformed into a diverse mix of pollinator-friendly, low-lying, deep-rooted plants. USS Man Solar LLC will control noxious weeds throughout the life of the Solar Garden. FEMA Flood maps, NWI Maps and any other necessary materials are included in Appendix I. The EcoCat consultation is included in Appendix III. The Results from the US Fish and Wildlife Service is included in Appendix VI. The Illinois State Historic Preservation submittal is included in Appendix VII. All these items, as well as from feedback by the county and community show how USS Man Solar LLC has worked on creating a development to best avoid protected areas.

Per the Livingston County Ordinance, USS Man Solar LLC agrees that the commercial solar energy facility will obtain and maintain the designation of being a Pollinator Friendly Solar Site.

- Pollinator-friendly habitat must be designed, installed, and maintained under and around the solar

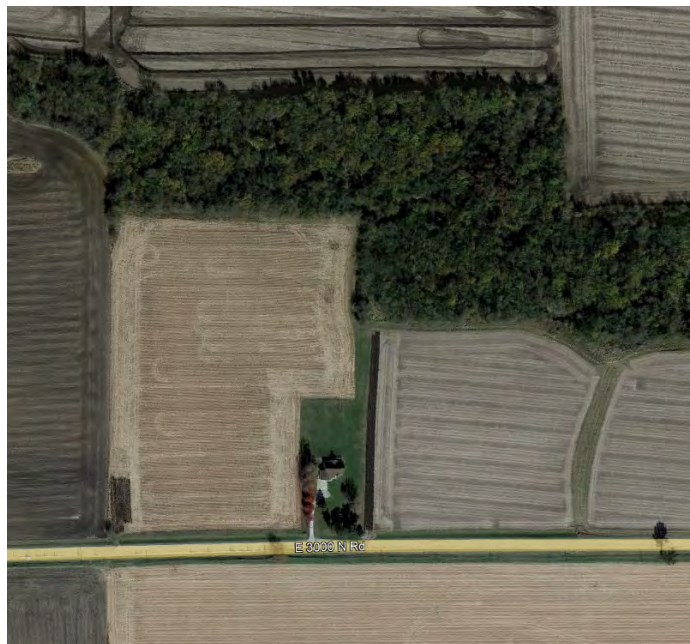
panels in all areas within the perimeter fencing.

- Pollinator-friendly habitat will be installed as a buffer outside of the perimeter fencing of the commercial solar energy facility. Buffer width will be a minimum of 36' measured from the perimeter fencing.
- Pollinator-friendly habitat will be installed on properly prepared soils, and Facility Owners will employ Integrated Vegetation Management and/or Conservation Grazing best practices to maintain and maximize operational savings.
- Pollinator friendly habitat will be developed, implemented, and maintained in accordance with IDNR's Solar Site Pollinator Scorecard Guidelines and will consist of only native grasses, forbs, and legume species. Native seed mixes must be approved by the Livingston County Soil and Water office prior to implementation.
- The Facility Owner must complete the Illinois Planned Habitat on Solar Sites Scorecard with a minimum score of 85 to achieve preliminary recognition as a "Pollinator Friendly Solar Site". This preliminary recognition is good for 3 years and must be recertified at least once every 5 years thereafter. The county shall be provided documentation within the time periods set forth herein showing compliance.
- Noxious weeds will be controlled in accordance with all state and local laws, regulations and ordinances.

Provided in Appendix I is a drain tile map. There are no existing drain tiles in the area of interest for USS Man Solar LLC. Further exploration will be completed prior to construction.

We understand and appreciate that many communities would like to see landscape screening that provides an effective visual buffer from neighboring residences. In addition to meeting those needs, our landscape screening is designed to fit with the neighborhood, benefit the local environment, and meet the county requirements.

Due to the rural nature of USS Man Solar LLC, and the distance and visibility to residential structures, we are proposing a living buffer on the east and south fence lines. The existing farmstead just southeast of the project already has a line of trees along its western property line. The additional living buffer that will be provided by USS Man Solar LLC will ensure that the solar garden is full screened. Additionally, there is a dense tree line along the northeast and northern fence lines where USS Man Solar LLC would like the county to consider this sufficient. See image to the right and our site plan in Appendix I.



In conjunction with the Special Use Permit, USS Man Solar will be submitting for a Variance Request to the living buffer requirement as outlined in Sec. 56-646. Design standards for Commercial Solar Energy Facilities for only the western fence line. Due to the rural nature and more than 1,350 feet from the nearest residential structure west of the project, we believe that an additional living buffer only along the west fence line is not warranted. Michelle Proska (landowner) is concerned about having to remove all the trees and roots once the project is decommissioned. For dozens of years this

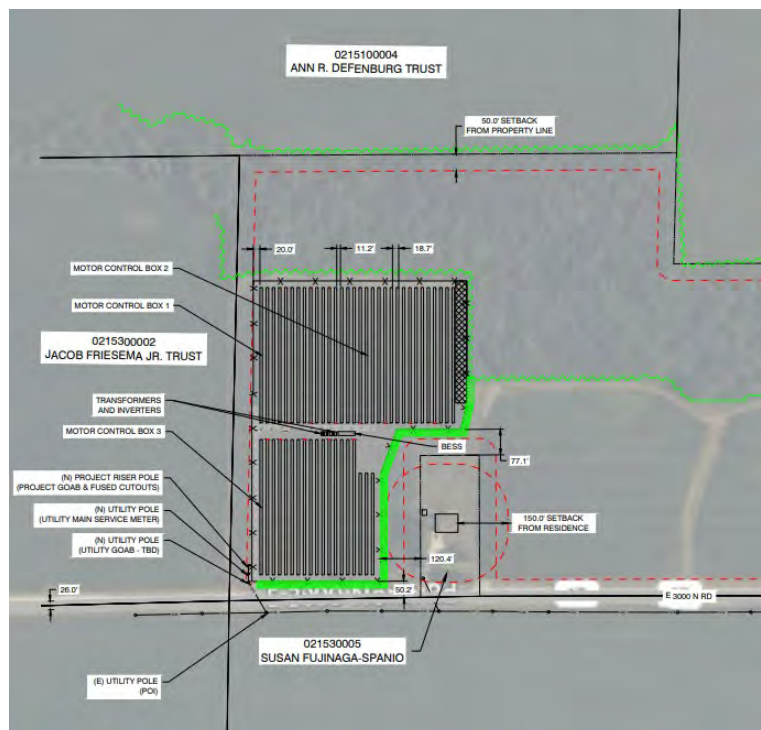
cropland has been sprayed for weeds and trees to not grow. We do understand the need for landscaping along the roadway and along the east fence line. However, we see additional landscaping along the west fence line isn't warranted with such a large setback from the nearest residence. Additionally, there is a good change, some of the trees will not survive even with a good maintenance plan. Ultimately, an additional living buffer will put further financial burden on USS Man Solar LLC to procure financing to construct this renewable energy project.

SITE PLAN

Enclosed in Appendix I you will find our proposed site plan. The site plan was redesigned based on feedback from the surrounding neighbors, the Livingston County staff, and the landowner. USS Man Solar LLC has curtailed this project from a 3.998MWac to a 1.998MWac, a 50% decrease in size, this has allowed us to add additional landscape screening for the neighboring residents. The Livingston County staff have been very helpful in assisting us to ensure we present the least impactful project possible while trying to deliver a renewable source of energy, a native habitat, and increase the tax base community.

Located below and in more detail in Appendix I, you can see that we have not only met these requirements but exceeded them with the guidance of the Livingston County's Ordinance. USS Man Solar LLC has taken into consideration the feedback and concern from surrounding residents. As you can see on the snippet below, we have added sufficient landscape screening, as well as additional timber lines, and have curtailed this project in order to decrease the view for residents that live within the direct vicinity of the property.

As approved in the Livingston County Ordinance Article VIII-B, the minimum setback requirements are 150 feet from a residential structure and 50 feet from any non-participating property line. Located below and in more detail in Appendix I, you can see that we have greatly exceeded these requirements. The curtailment of the project allowed for additional landscape screening. From our previous site plan, we shifted the solar panels away from the closest residential structure. The site plan, along with the narrative and other associated figures in the Appendices, addresses all requirements listed in the Livingston County Ordinance Article VIII-B.



SOLAR ON AGRICULTURAL LAND

Harvesting solar to generate energy is widely viewed as an agricultural business opportunity for farmers across the United States, including those in Illinois. This is evidenced by many agricultural groups that have gone on record to support the expansion of community solar.

There are three primary reasons why community solar gardens contribute to the preservation and improvement of agricultural land:

1. The Solar Garden area is converted to native grasses and pollinator-friendly habitat. As mentioned in the *LOCAL IMPACT* section, this makes a tremendous impact on the local environment, including but not limited to soil quality, water quality, and crop yields.
2. Decommissioning of community solar gardens is simple and does not disrupt the land. We remove the solar panels, racking, concrete inverter pads, and any other equipment and restore the land. Because we use piles as foundation, system removal involves almost no disruption to the land. After the Solar Garden's life, what is left is an undisturbed field of native grasses atop immaculate soils. This is one of the only ways for a landowner to increase and diversify income while preserving and protecting farmland for future generations, when crop prices and agricultural practices may be more viable than they are today.
3. Landowners can convert a small portion of farmland to a community solar garden, which provides them with guaranteed, increased, and diversified income. This financial stability allows landowners to keep their remaining land for farming and in the family. This sort of financial stability is traditionally only offered by residential, commercial, or industrial development. Of these options, the community solar garden will be the best steward of the soils and natural resources of the agricultural land.

CONSTRUCTION

OVERVIEW

The construction of a Solar Garden is simpler than many people realize. Galvanized steel I-beams are driven into the ground to the appropriate depth to ensure long-term stability, according to detailed structural and geotechnical analysis. Racking sits on top of the steel I-beams. Solar panels clip into the racks. Inverters are set up in between sections of solar panels. Electrical line is buried 4' deep in an electrical conduit. There are no concrete footings and no permanent structures or buildings, which makes the eventual decommissioning process easy at the end of the Solar Garden life. We use Tier 1 solar panels to achieve high efficiency and conform to high quality control and safety standards.

The bulk of the construction will occur in approximately 7 weeks, followed by testing, inspections, and commissioning work. The most noticeable phase of the construction is the pile driving, which is often completed in 2 days or less. In total, the construction period is expected to last about 4 months. The hours of construction will be 7:00am to 7:00pm Monday-Saturday. No work will be done on Sundays and nationally observed holidays.

PARKING

During our construction phase, a temporary parking area, adjacent to the Project, will be used for installation crews, delivery trucks (as needed), and construction and supervision personnel.

VEHICLES/CONSTRUCTION TRIPS

Trucks for maintenance activities will be standard, with minimal tooling and parts for activities as described above.

- Most deliveries will be in the first month and most electrical testing will be in the later stages of construction.
- Modules will come on 40-foot flatbed trucks or in 40-foot containers.
- We expect no more than 30 deliveries for all solar modules.
- We expect no more than 20 container trucks to deliver racking material.
- We expect no more than 5 deliveries of inverters, switchgears, transformers, and battery storage components.
- We expect 4 trips for Balance of Plant equipment in containers that are 40 feet or smaller.
- Note: We expect no more than 4 deliveries per day.

STRUCTURES

All monitoring is done remotely. No permanent structures will be built onsite.

STORAGE DURING OPERATION

As referenced above, there will be no equipment or materials storage onsite.

SIGNAGE

There will be no external signage of the facility. To provide safety and support good practices, labeling of electrical equipment requires internal signage. All signage will be in compliance with local and state regulations.

WATER, SEWAGE, AND WASTE

No water, sewage, or waste management services are required onsite. Portable waste facilities will be provided during the construction period. Delivery routes will be designed to pose the smallest traffic impact in the local community. We will coordinate with local authorities as to preferred times and routes prior to construction mobilization. Construction employees will park within the Project premises. There will be no permanent storage on-site. Employees will be provided with mobile waste management options sourced from the local area. USS Man Solar LLC takes responsibility for maintenance or replacement or new installation of any drain tile servicing this site, if USS Man Solar LLC and landowner determine it necessary.

SITE ACCESS

An unpaved access road will be built from the public road to the Project. This provides necessary access for construction, regular mowing, and maintenance activities, and decommissioning of the Project, while minimizing impact to adjacent land uses. The road also provides access in the unlikely event that

emergency crews are needed onsite. We utilize the following simple process for construction of the access road:

- (1) Remove topsoil from a 12-foot-wide area and spread it thinly in adjacent areas,
- (2) Lay down geotextile fabric over compacted subgrades, if necessary, to prevent vegetative growth, and
- (3) Install and compact approximately 8-10" of aggregate material/gravel to level with surrounding grade.

This Project will be accessed from a 12-foot-wide access road directly off E. 3000 N. Rd via the new field access. USS Man Solar LLC will work with the road authority (State of Illinois), for approval. See the Site Plan in Appendix I for a depiction of the access road.

OPERATIONS AND MAINTENANCE

As a long-term owner and operator, US Solar's operations team analyzes Solar Garden performance remotely 24/7 through our data acquisition system. This real-time monitoring aids in detecting and diagnosing any production anomalies, identifying, and addressing underperformance issues, managing service teams and technicians, and contacting landowners and the utility if necessary.

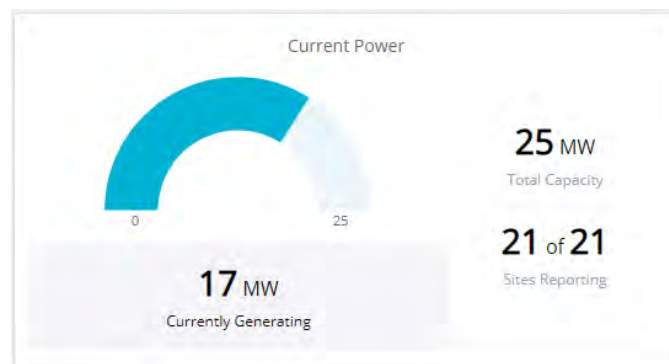


Figure: Snapshot of instantaneous generation for an operating portfolio

Approximately 4-6 times per year, authorized and insured technicians will be sent out to perform routine maintenance on the site, in addition to any unplanned maintenance. During the first few years, maintenance personnel will visit the site a few extra times per year to ensure the health of vegetation and landscaping.

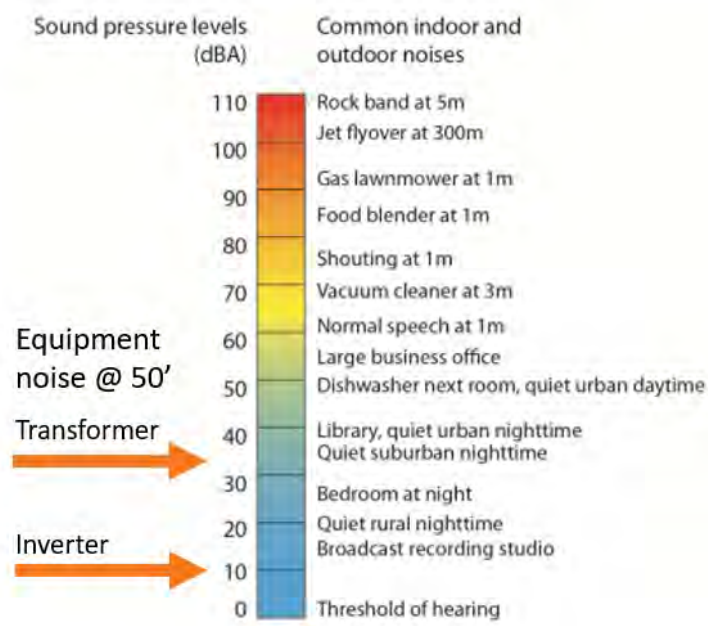
Maintenance and Operations questions can be directed to the USS Man Solar LLC Operations Team at 612-260-2230. A Knox Box and keys will be provided at the locked gate for emergency personnel access only. The Operations Team will be able to address any issues related to drainage, weed control, screening, general maintenance, and operation. Emergency contact details to be provided prior to construction.

In addition, Commonwealth Edison personnel will have an easement and will perform any maintenance activities of their interconnection facilities, if needed.

NOISE

The noise levels of all equipment to be installed for USS Man Solar LLC will comply with all state and local sound limitations set by the Illinois Pollution Control Board under 35 Ill. Adm. Code Parts 900, 901, and 910. For our standard Solis 185kW inverter, the decibels at 3 feet are measured at ≤ 65 . For our standard Maddox Transformer, the decibels at 3 feet are measured at ≤ 60 . Well below the sound level limitations of Parts 900, 901, and 910. The closest inverter or transformer is nearly 150 feet from any residential lot.

Decibel levels of common noise sources:



PARKING

After construction is completed, there will be approximately two parking spots within the boundaries of the perimeter fence. Our vehicles will park there to avoid disrupting traffic or adjacent land use.

OTHER

There will be:

- No daily traffic
- No equipment or materials storage onsite
- No marketing/advertising signage
- No water/sewer/trash utilities required onsite

GRADING AND STORMWATER POLLUTION PREVENTION

GRADING

Grading and filling will be limited to the extent practical. Our solar racking can accommodate the current terrain, a primary reason we selected this location. This will maintain the original grading on the site and sustain the existing drainage and runoff patterns, minimizing impact to surrounding lands.

STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP)

The SWPPP will include the following:

- Storm water mitigation and management resources
- Wetland impacts (if any)
- Temporary erosion prevention measures
- Temporary sediment control measures
- Permanent erosion and sediment control measures, if needed
- Best management practices (BMPs) regarding erosion control
- Inspection and maintenance
- Pollution prevention measures
- Final stabilization plan for long-term soil stability

EROSION AND SEDIMENT CONTROL PLAN

USS Man Solar LLC will comply with the requirements outlined above, including obtaining a stormwater permit prior to construction. Our racking equipment is very accommodating of various terrain types and topography. Please refer to [Appendix I](#) for the erosion and sediment control site plan.

NO HAZARDOUS MATERIALS INVOLVED

We exclusively use Tier 1 solar panels. The materials that comprise Tier 1 solar panels are the same materials that comprise a cell phone: glass, silicon, silver, aluminum. All the materials used in the Solar Garden are stable and fully contained. There is no pollution of the air, groundwater, or surface area of the site on which they sit.

DECOMMISSIONING

The Solar Garden consists of many recyclable materials, including glass, semiconductor material, steel, aluminum, copper, and plastics. When the Solar Garden reaches the end of its operational life, the component parts will be dismantled and recycled as described below. We have a lease contract with the property owner, which requires us to decommission and restore the site at our expense. The decommissioning plan would commence at the end of the lease term or in the event of twelve (12) months of non-operation. At the time of decommissioning, the Solar Garden components will be dismantled and removed using minimal impact construction equipment, and materials will be safely recycled or disposed. USS Man Solar LLC will be responsible for all the decommissioning costs. Furthermore, an Agricultural Impact Mitigation Agreement (“AIMA”) will be entered into by and between USS Man Solar LLC and the Illinois Department of Agriculture pursuant to Illinois law prior to the commencement of construction of the facility. The AIMA addresses standards for decommissioning of solar facilities that all commercial solar energy systems in the State of Illinois must abide by.

REMOVAL PROCESS

The decommissioning of the Solar Garden proceeds in the following reverse order of the installation:

1. The solar system will be disconnected from the utility power grid
2. PV modules will be disconnected and removed
3. Electrical cables will be removed and recycled off-site

4. PV module racking will be removed and recycled off-site
5. PV module support posts will be removed and recycled off-site
6. Electrical devices, including transformers and inverters, will be removed and recycled off-site
7. Concrete pads will be removed and recycled off-site
8. Fencing will be removed and recycled off-site
9. Reclaim soils in the access driveway and equipment pad areas by removing imported aggregate material and concrete foundations; replace with soils as needed

The Solar Garden site may be converted to other uses in accordance with applicable land use regulations at the time of decommissioning. There are no permanent changes to the site, and it will be returned in terrific condition. This is one of the many great things about community solar gardens. If desired, the site can return to productive farmland after the system is removed.

DECOMMISSIONING CONSIDERATIONS

We ask that Livingston County take note of 2 important considerations: 1) a community solar garden is not a public nuisance and 2) the resale and recycle value are expected to exceed the cost of decommissioning.

1) Our modules do not contain hazardous materials and the Solar Garden is not connected to government utilities (water, sewer, etc.). The Solar Garden is required to be fenced and almost all the land is permanent vegetation which improves erosion control, soil quality, and water quality. For these reasons, the Solar Garden, whether operational or non-operational, is not a public nuisance threat that would require government involvement in decommissioning or removal of the Solar Garden. Compare this to an abandoned home, barn, etc. that may regularly include hazardous materials and/or become a public nuisance.

2) Upon the end of the Solar Garden's life, the component parts may be resold and recycled. The aggregate value of the equipment is expected to exceed the cost of decommissioning and removal. Solar modules, for example, have power output warranties guaranteeing a minimum power output in Year 20 of at least 80% of Year 1. Since the value of solar panels is measured by their production of watts and the value of electricity, it is easy to calculate expected resale value. Even using extremely conservative assumptions, the value of the solar modules alone greatly exceeds the cost of decommissioning. This does not factor in the recycle value of other raw materials like steel, copper, etc. So, decommissioning is seen as a process that results in a net profit, incentivizing the Solar Garden owner to do it.

DECOMMISSIONING FINANCIAL SURETIES

Despite the considerations of 1) the Solar Garden is not a public nuisance, 2) the resale and recycle value is expected to exceed the cost of decommissioning, and 3) Livingston County and taxpayers are not at risk; we propose posting with Livingston County decommissioning financial surety that will be phased in over the first 11 years of the project's life pursuant to terms in the completed Agricultural Impact Mitigation Agreement (AIMA). See Appendix V. The surety would be in the form of a cash deposit, a letter of credit, or some other form approved by the Livingston County. This financial surety provides an extra layer of security that the Solar Garden site will be returned to the appropriate condition at the end of the Solar Garden's useful life or earlier, should the Solar Garden cease operations for a twelve-month period. Livingston County will be the designated beneficiary of the fund and the landowner will be provided with a copy of the document, thereby establishing the obligation before construction

commences.

INSURANCE INFORMATION

USS Man Solar LLC will be required to meet insurance requirements under long-term contracts with several parties, including the site landowner, Commonwealth Edison and its Solar Garden lenders and investors. USS Man Solar LLC will be listed on a policy that includes:

- Liability coverage that will include \$10,000,000 per occurrence and \$40,000,000 in the aggregate or whichever coverage is required by the county ordinance prior to at the time of the building permit.
- Property coverage in an amount necessary to cover the value of the Solar Garden and up to one year of lost revenue in the event the project is destroyed and needs to be rebuilt

PROJECT OWNERSHIP

The applicant of the SUP, USS Man Solar LLC, is a subsidiary of US Solar. USS Man Solar is the owner of the Project. Please find more information about US Solar at www.us-solar.com.

INTERCONNECTION WITH COMMONWEALTH EDISON

USS Man Solar LLC has already received pre-application data on substation and feeder existing/pending/available capacity. The Solar Garden also has submitted an interconnection application to Commonwealth Edison where we have received the Feasibility Study Results and cost estimate. The project is currently in the System Impact Study. We expect to have an interconnection agreement with Commonwealth Edison sometime in Q4 2023. In the next few months, we hope to be submitting this project to the State of Illinois' Adjustable Block Program (ABP).

MANUFACTURER'S SPECIFICATIONS

USS Man Solar LLC uses only Tier 1 solar modules. Tier 1 solar modules are manufactured to the highest quality, performance, and lifespan, produced by companies that have at least a five-year history in manufacturing them. Countless banks and financiers have vetted these modules. They are designed to absorb light and reflect less than 2% of the incoming sunlight, which is less than many natural features, including water, snow, crops, and grass. There will be no material impact from glare.

We are using Tier 1 string inverters for this Solar Garden installed throughout the site. The inverters and electrical pad mount transformers specifications are enclosed in Appendix VIII and will meet all applicable codes and requirements.

CONCLUSION

USS Man Solar LLC has complied with all criteria and requirements of Livingston County Ordinance Article III-B, and we respectfully request that the Livingston County Boards approves the application.

APPENDIX I – SITE PLANS AND PROJECT MAPS

SYSTEM SPECIFICATIONS	
SYSTEM SIZE DC	3,093.39 kW
SYSTEM SIZE AC	1,998.00 kW
DC/AC RATIO	1.55
MODULE MANUFACTURER	JINKO SOLAR
MODULE MODEL	JKM570M-72HL4-TV
MODULE RATING	570 W
TOTAL MODULE QTY	5,427
MODULES PER STRING	27
TOTAL NO. OF STRINGS	201
INVERTER MANUFACTURER	GINLONG SOLIS
INVERTER MODEL	SOLIS 185K EHV 5G US-PLUS
INVERTER RATING	166.50 kW*
INVERTER QTY	12
NO. OF STRINGS PER INVERTER	16, 17
STEP-UP TRANSFORMER	13.8KV/600V, 2198KVA
RACKING	ATI HSAT
TILT ANGLE	0°
TOTAL NO. TRACKER ROW WITH 108 MODULES	48
TOTAL NO. TRACKER ROW WITH 81 MODULES	3
INTER-ROW SPACING	11.2'
PITCH	18.7°
GCR	40%
AREA OCCUPIED	10.52 AC
* INVERTERS ARE TO BE FACTORY PROGRAMMED TO OUTPUT 166.50KW MAX.	

BESS SPECIFICATIONS	
MANUFACTURER	SYL BATTERY CO., LTD
RATED POWER	1,360 kW
CAPACITY	2723.84 kWh
MODEL	SU340U170K

GENERAL NOTES	
1.	CUSTOMER POLE. UTILITY AC DISCONNECT, FUSED, ACCESSIBLE, VISIBLE AND LOCKABLE DISCONNECT. PROVIDE PLACARD STATING "UTILITY AC DISCONNECT".
2.	DISCONNECT: WILL BE ACCESSIBLE, LOCKABLE, VISIBLE BLADE DISCONNECT.
3.	PV INSTALLATION TO COMPLY WITH NEC 2020 ARTICLE 690 AND ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES OR REGULATIONS.
4.	EQUIPMENT SHALL BE LABELED PER NEC 2020 ARTICLE 690.
5.	12' ACCESS DRIVES SHALL BE DESIGNED TO ACCOMMODATE ALL CONSTRUCTION, OPERATIONS, MAINTENANCE AND UTILITY TRAFFIC THROUGHOUT THE SITE.
6.	PROVIDE UTILITY 24/7 UNESCORTED KEYLESS ACCESS.
7.	ALL EQUIPMENT CLEARANCES AND WORK SPACES SHALL COMPLY WITH NEC 2020 REQUIREMENTS.

ADJACENT PROPERTIES		
APN	OWNER	ACREAGE
0215300009	DOLORES NOE	8.38
0215300005	SUSAN FUJINAGA-SPANIO	1.71
0215100004	ANN. R DEFENBAUGH TRUST	155.94
0215400006	MATHEW HOLLAND	27
0222100003	SHARON LOUDON	80
0215300002	JACOB FRIESEMA JR. TRUST	33

ACREAGE BREAKOUT	
CROPLAND	35.44 Ac
TIMBER	22.61 Ac
TOTAL	58.05 Ac

LEGEND	
	108 MODULES TRACKER ROW
	81 MODULES TRACKER ROW
	(1) 600V 3000A PANELBOARD
	POWER STATION - (1) MV TRANSFORMER, (1) DAS, (1) WEATHER STATION
	STRING INVERTER
	12' WIDE SITE ACCESS ROAD
	EXISTING ROADS
	PROPERTY LINE
	SETBACK
	U.G. MEDIUM VOLTAGE CABLE
	UTILITY CIRCUIT
	PROJECT SITE SECURITY FENCE
	TIMBER LINE
	LANDSCAPE BUFFER
	EXISTING STRUCTURES
	STORM WATER BASIN



1 ARRAY PLAN
SCALE: 1"=175'



PROJECT:

USS MAN
SOLAR LLC

PROJECT ADDRESS:
E 3000 N RD,
MANVILLE, IL 61319

LAT: 41.063296°
LON: -88.747629°

0	PRELIMINARY	08/08/23
REV. NO.	DESCRIPTION	DATE

SHEET TITLE:

PRELIMINARY
LAYOUT

DRAWING NO.:

PV-100

DRAWN BY:

LR

REVIEWED BY:

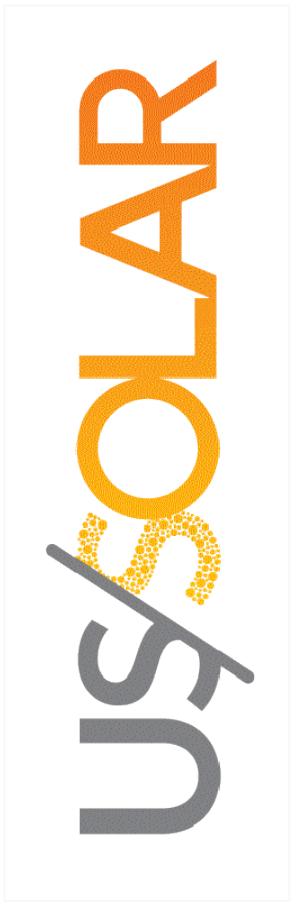
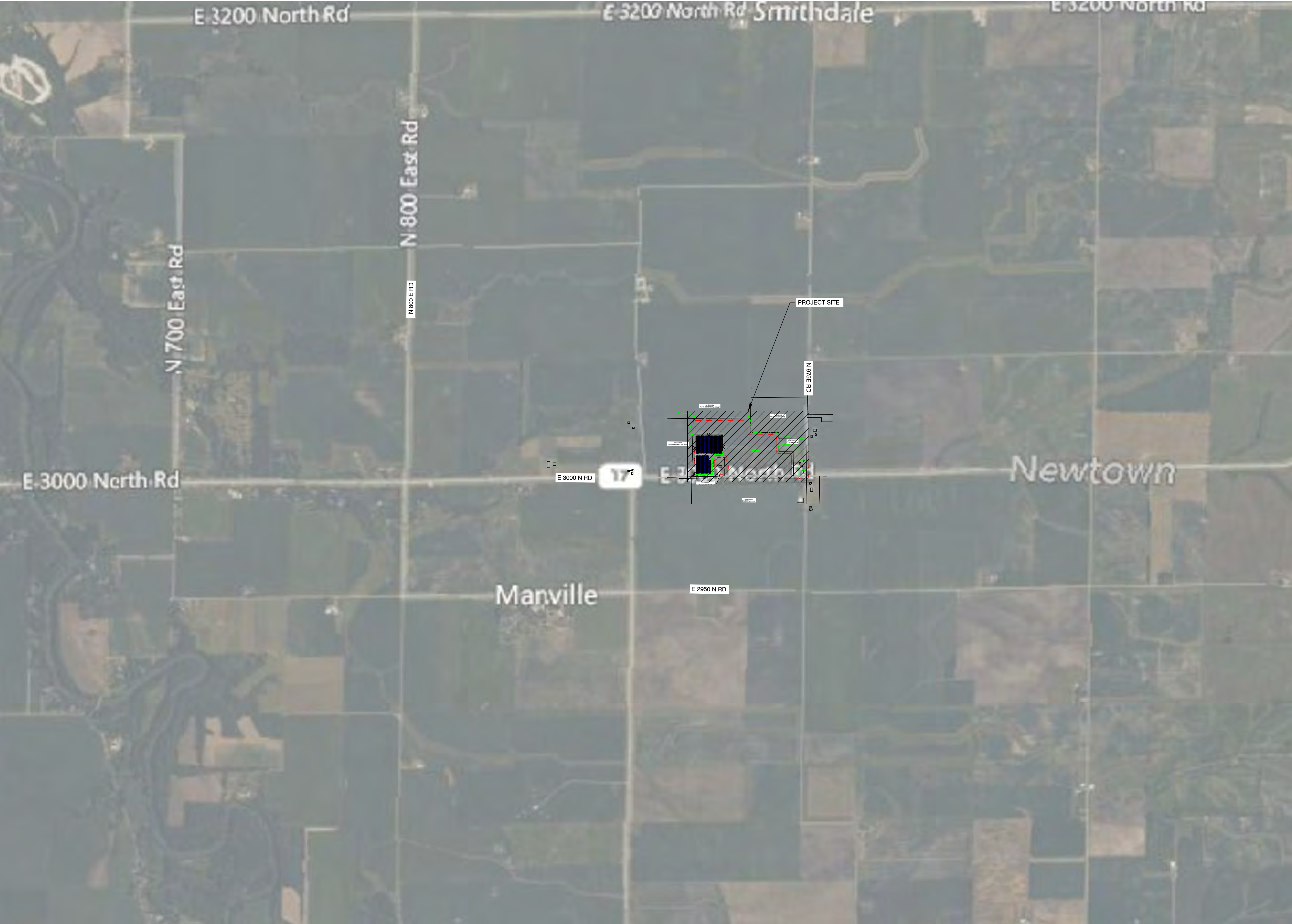
DATE:

08/08/23

SCALE:

AS SHOWN

PROJECT NO.:



PROJECT:

USS MAN
SOLAR LLC

PROJECT ADDRESS:
E 3000 N RD,
MANVILLE, IL 61319

LAT: 41.063296°
LON: -88.747629°

0	PRELIMINARY	08/08/23
REV. NO.	DESCRIPTION	DATE

SHEET TITLE:

PRELIMINARY
LAYOUT

DRAWING NO.:

PV-101

DRAWN BY:

LR

REVIEWED BY:

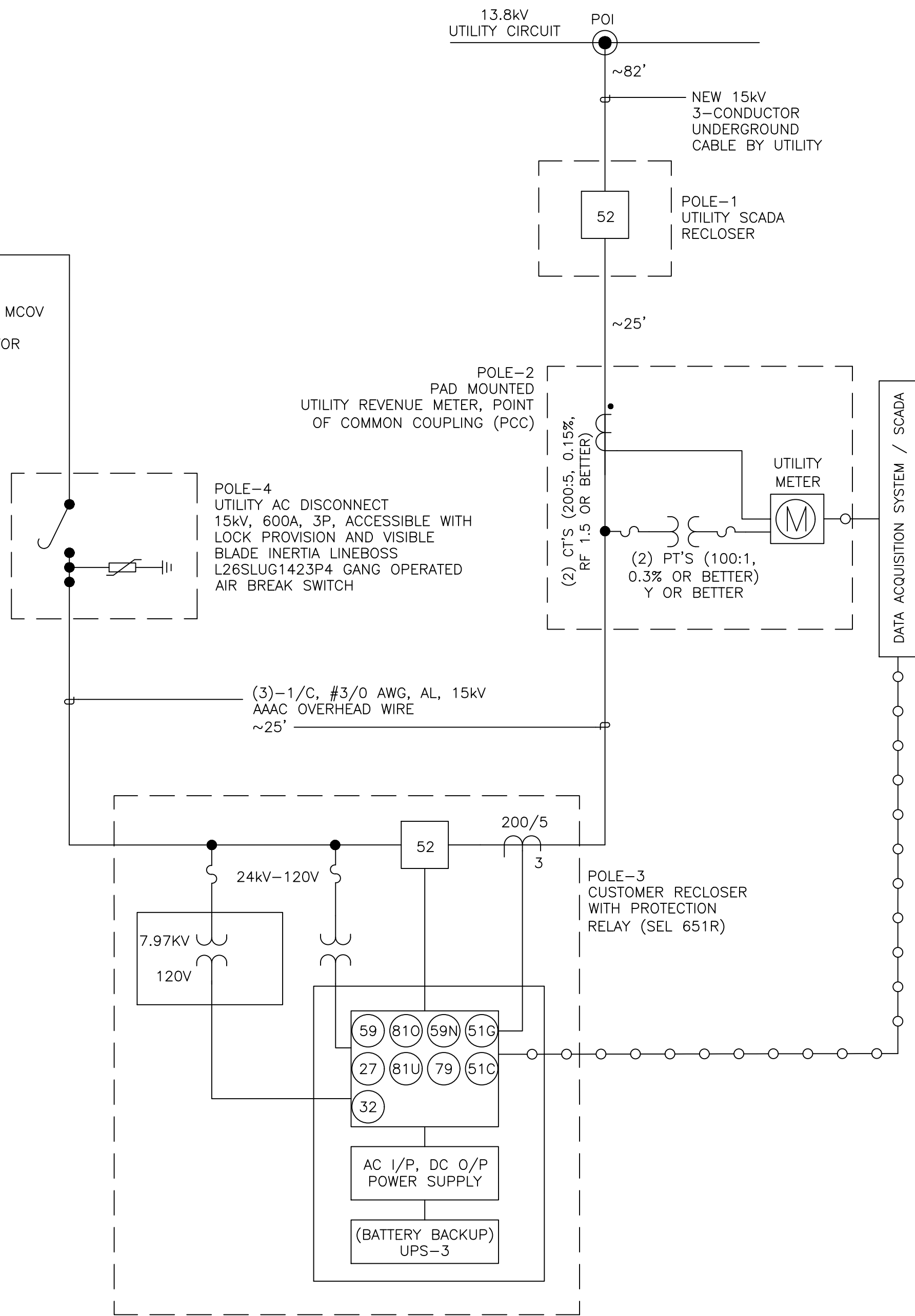
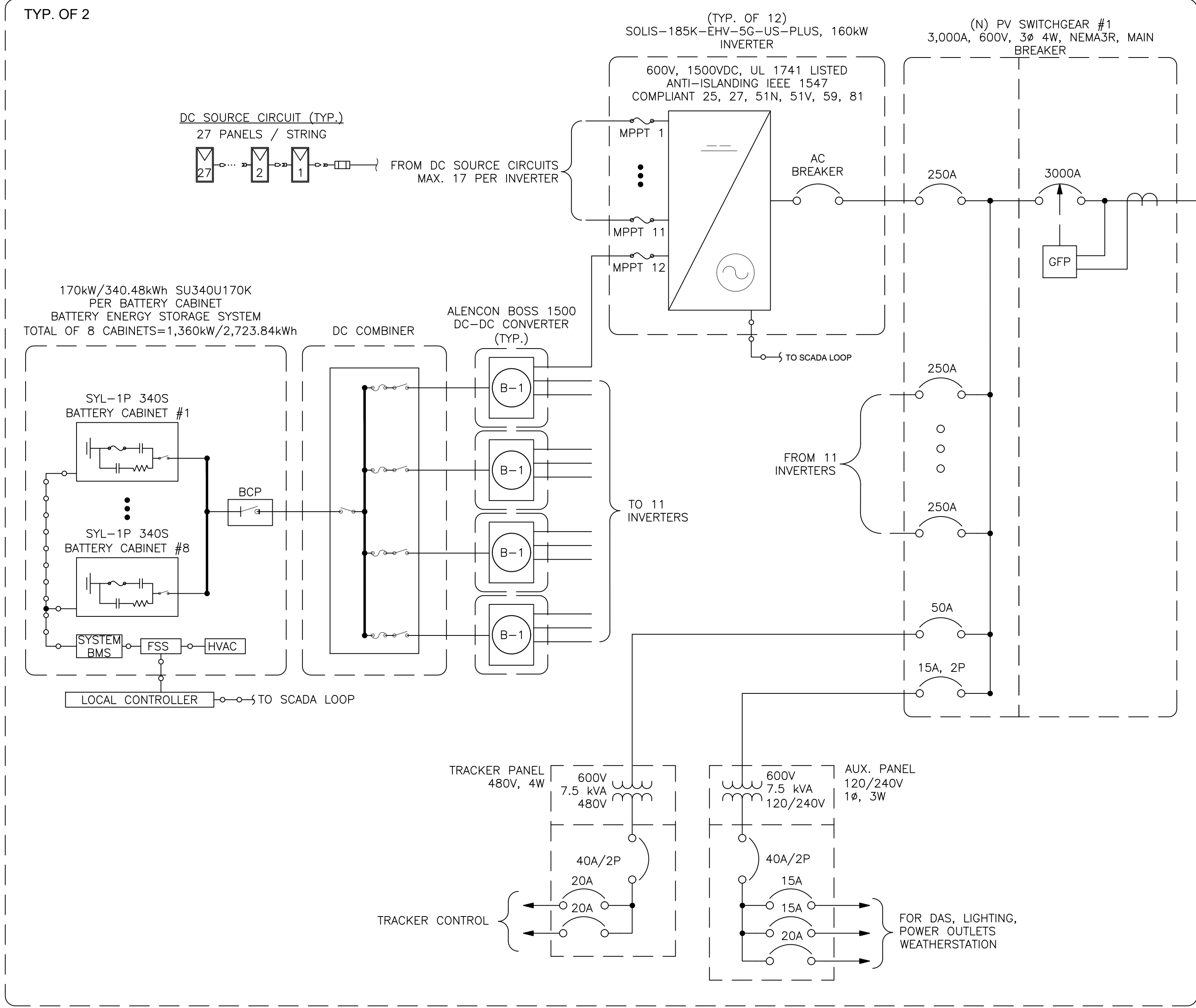
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08/08/23

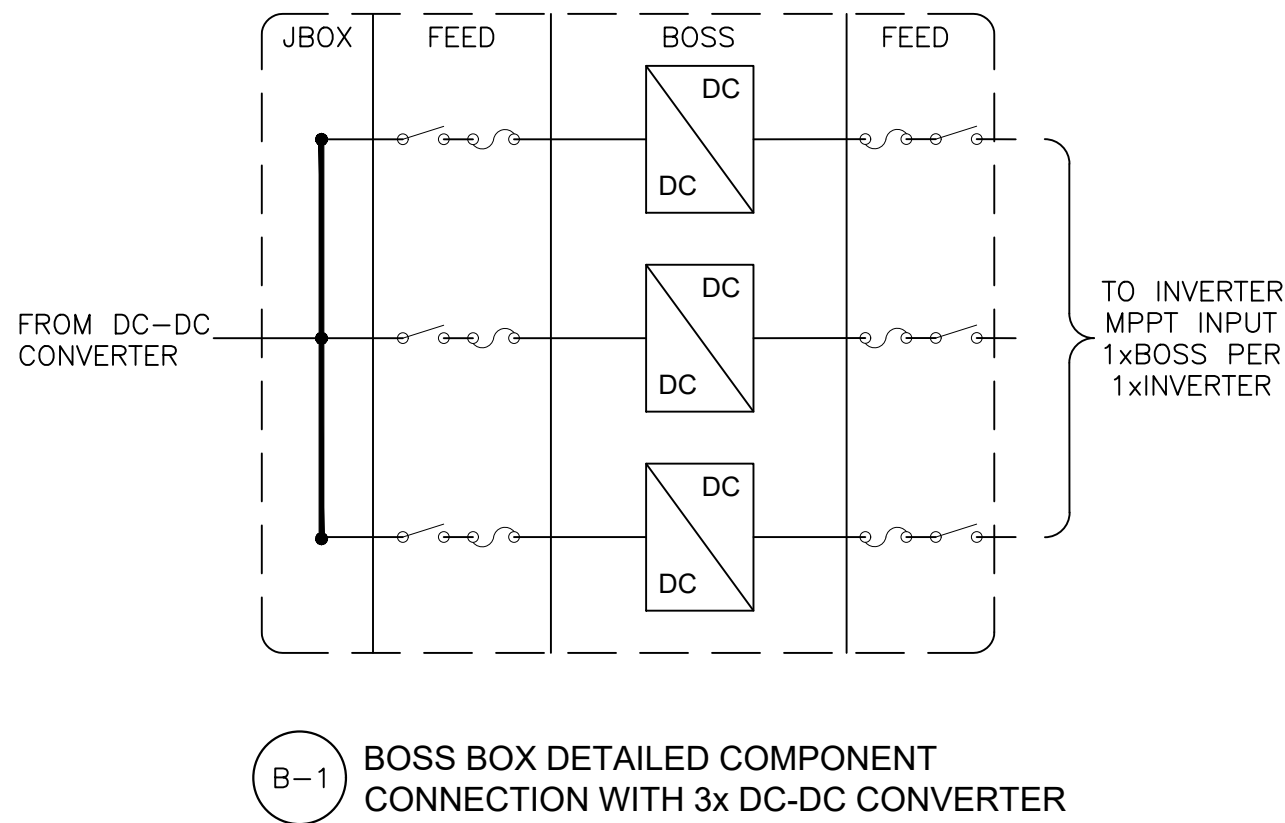
SCALE:

AS SHOWN

PROJECT NO.:



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SYSTEM SIZE AC	1,998.00 kW
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INVERTER QTY	12
NO. OF STRINGS PER INVERTER	16, 17
STEP-UP TRANSFORMER	13.8KV/600V, 2198KVA
* INVERTERS ARE TO BE FACTORY PROGRAMMED TO OUTPUT 166.50KW MAX.	
BESS SPECIFICATIONS	
MANUFACTURER	SYL BATTERY CO., LTD
RATED POWER	1,360 kW
CAPACITY	2,723.84 kWh
MODEL	SU340U170K



- GENERAL NOTES
- AC MV CIRCUITS SHALL BE INSTALLED AND INTERCONNECTED WITH UTILITY, PER UTILITY SPECIFICATIONS.
 - ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2020 EDITION OF NATIONAL ELECTRIC CODE.
 - ALL DC AND AC EQUIPMENT, WHERE APPLICABLE, SHALL BE LISTED AND LABELED PER RECOGNIZED ELECTRICAL TESTING LABORATORY AND INSTALLED PER THE LISTING REQUIREMENTS, THE MANUFACTURER'S INSTRUCTIONS AND IN ACCORDANCE WITH NEC.
 - FINAL RECLOSER CONTROL SETTINGS TO BE COORDINATED WITH UTILITY AND CONTRACTOR.
 - ALL BREAKERS AND DISCONNECT SWITCHES ARE CLOSED UNDER NORMAL OPERATING CONDITIONS UNLESS OTHERWISE NOTED.

NOT FOR CONSTRUCTION

US/SOLAR

PROJECT:

USS MAN
SOLAR LLC

PROJECT ADDRESS:
E 3000 N RD,
MANVILLE, IL 61319

LAT: 41.063296°
LON: -88.747629°

0	PRELIMINARY	08/08/23
REV. NO.	DESCRIPTION	DATE

SHEET TITLE:

SINGLE LINE
DIAGRAM

DRAWING NO.:

E-100

DRAWN BY:

LR

REVIEWED BY:

DATE:

08/08/23

SCALE:

AS SHOWN

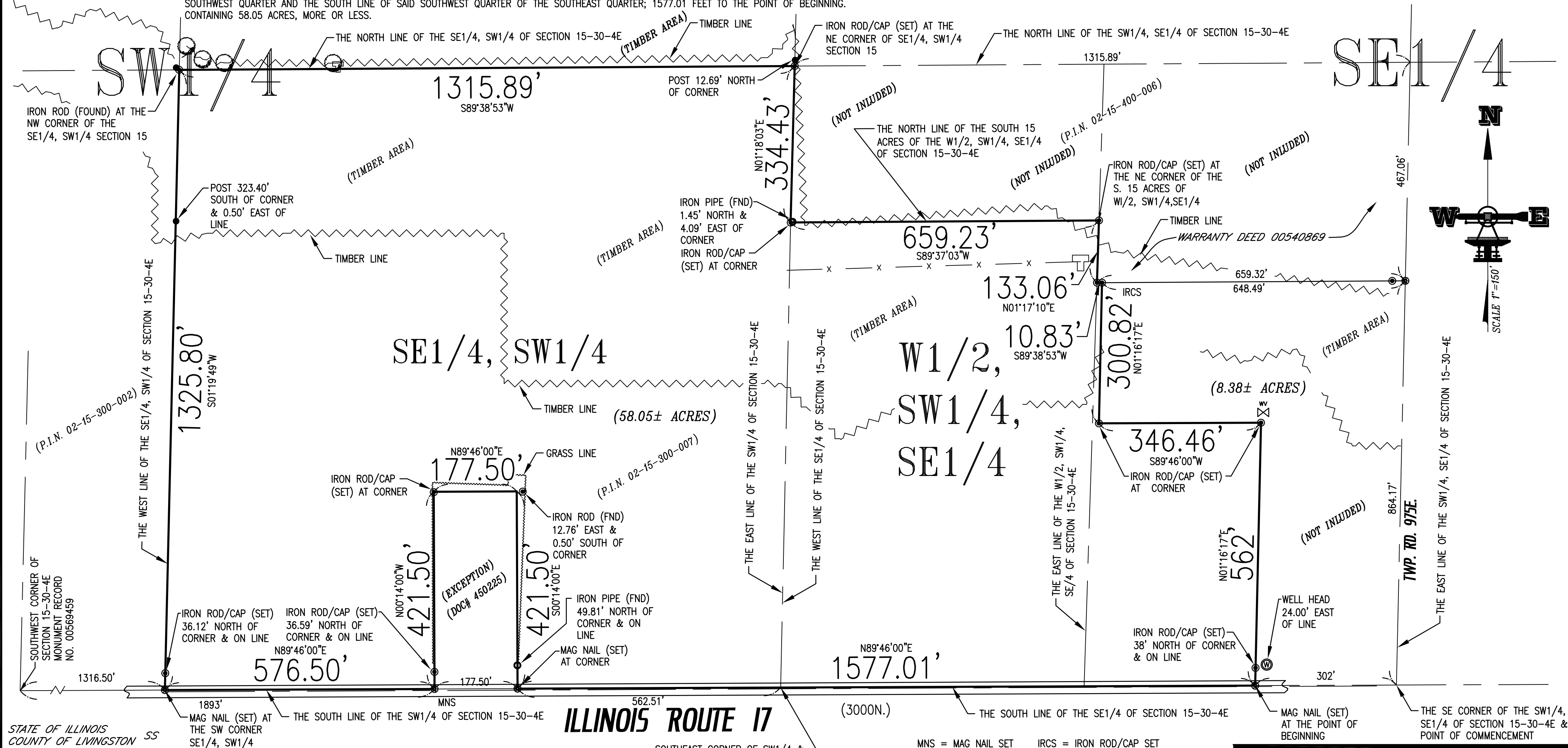
PROJECT NO.:



of

PART OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER TOGETHER WITH A PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER ALL IN SECTION 15, TOWNSHIP 30 NORTH, RANGE 4 EAST OF THE THIRD PRINCIPAL MERIDIAN, LIVINGSTON COUNTY, ILLINOIS, BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHEAST CORNER OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, AND RUNNING; THENCE SOUTH 89°46'00" WEST, ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, 302.00 FEET TO THE POINT OF BEGINNING; THENCE NORTH 01°16'17" EAST, PARALLEL WITH THE EAST LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, 562.00 FEET; THENCE SOUTH 89°46'00" WEST, PARALLEL WITH SAID SOUTH LINE, 346.46 FEET; THENCE NORTH 01°16'17" EAST, PARALLEL WITH SAID EAST LINE OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, 300.82 FEET, TO A POINT ON THE SOUTH LINE OF A TRACT OF LAND CONVEYED BY WARRANTY DEED RECORDED AS DOCUMENT NO. 540869 IN THE OFFICE OF THE LIVINGSTON COUNTY RECORDER; THENCE SOUTH 89°38'53" WEST ALONG SAID SOUTH LINE BEING PARALLEL WITH THE NORTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, 10.83 TO A POINT ON THE EAST LINE OF THE WEST HALF OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER; THENCE NORTH 01°17'10" EAST, ALONG SAID WEST LINE, 133.06 FEET TO THE NORTHEAST CORNER OF THE SOUTH 15 ACRES OF SAID WEST HALF; THENCE SOUTH 89°37'03" WEST, ALONG THE NORTH LINE OF SAID 15 ACRES, 659.23 FEET TO A POINT ON THE WEST LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER ALSO BEING THE EAST LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 01°18'03" EAST, ALONG SAID EAST LINE, 334.43 FEET TO THE NORTHEAST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE SOUTH 89°38'53" WEST, ALONG THE NORTH LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, 1315.89 FEET TO THE NORTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE SOUTH 01°19'49" WEST, ALONG THE WEST LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, 1325.80 FEET TO THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE NORTH 89°46'00" EAST, ALONG THE SOUTH LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, 576.50 FEET TO THE SOUTHWEST CORNER OF A PARCEL CONVEYED IN DOCUMENT NO. 450225 IN SAID RECORDER'S OFFICE; THENCE NORTH 00°14'00" WEST, ALONG THE WEST LINE OF SAID DOCUMENT NO. 450225, 421.50 FEET; THENCE NORTH 89°46'00" EAST, ALONG THE NORTH LINE OF SAID DOCUMENT NO. 450225, 177.50 FEET; THENCE SOUTH 00°14'00" EAST, ALONG THE EAST LINE OF SAID DOCUMENT NO. 450225, 421.50 FEET, TO THE SOUTHEAST CORNER OF SAID DOCUMENT NO. 450225; THENCE NORTH 89°46'00" EAST, ALONG THE SOUTH LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER AND THE SOUTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER; 1577.01 FEET TO THE POINT OF BEGINNING.

CONTAINING 58.05 ACRES. MORE OR LESS.

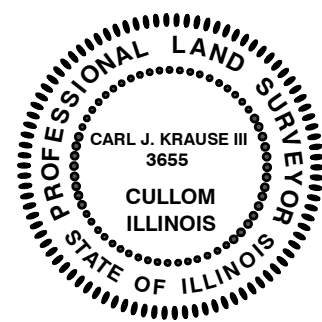


STATE OF ILLINOIS
COUNTY OF LIVINGSTON SS

I, CARL J. KRAUSE III, AN ILLINOIS PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I HAVE SURVEYED THE ABOVE DESCRIBED PROPERTY AND THAT THE PLAT HEREON DRAWN IS A CORRECT REPRESENTATION OF SAID SURVEY, AND "THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY SURVEY."

CULLOM, ILLINOIS Aug AUGUST 28, 2020

ILLINOIS PROFESSIONAL LAND SURVEYOR #3655
LICENSE EXPIRES NOVEMBER 30, 2020



SOUTHEAST CORNER OF SW1/4 & -
SOUTHWEST CORNER OF SE1/4
ALL IN SECTION 15-30-4E

MNS = MAG NAIL SET IRCS = IRON ROD/CAP SET

BEARINGS AND DISTANCES ON THIS SURVEY ARE GRID.
DATUM IS ILLINOIS EAST SPC NAD 83 (2011). PREVIOUS
DOCUMENTATION MAY HAVE ASSUMED DATA. THE
RELATIONSHIP BETWEEN GRID AND ASSUMED, ONE TO THE
OTHER, REMAIN THE SAME.

NOTES:

1. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE COMMITMENT, NONE WAS PROVIDED. THERE MAY BE EASEMENTS OR OTHER MATTERS OF RECORD OR NOT OF RECORD, AFFECTING THIS PROPERTY WHICH ARE NOT SHOWN.
2. NO TITLE OR EASEMENT DOCUMENTATION WAS PROVIDED BY THE CLIENT.
3. PLEASE CHECK LAND DESCRIPTION WITH DEED AND REPORT ANY DISCREPANCY IMMEDIATELY.
4. COMPARE ALL POINTS BEFORE BUILDING BY SAME AND REPORT ANY DISCREPANCY AT ONCE.
5. BUILDING LINE AND SETBACK LINE BUILDING LINE SHOWN ON THE RECORDED SUBDIVISION PLAT, FOR BUILDING LINE AND OTHER RESTRICTIONS NOT SHOWN HEREON REFER TO YOUR ABSTRACT, DEED, CONTRACT AND LOCAL BUILDING LINE REGULATION.

KRAUSE
SURVEYING INC.

ILLINOIS PROFESSIONAL DESIGN FIRM #184-004647

"SERVING ILLINOIS LANDOWNERS FOR OVER 60 YEARS"

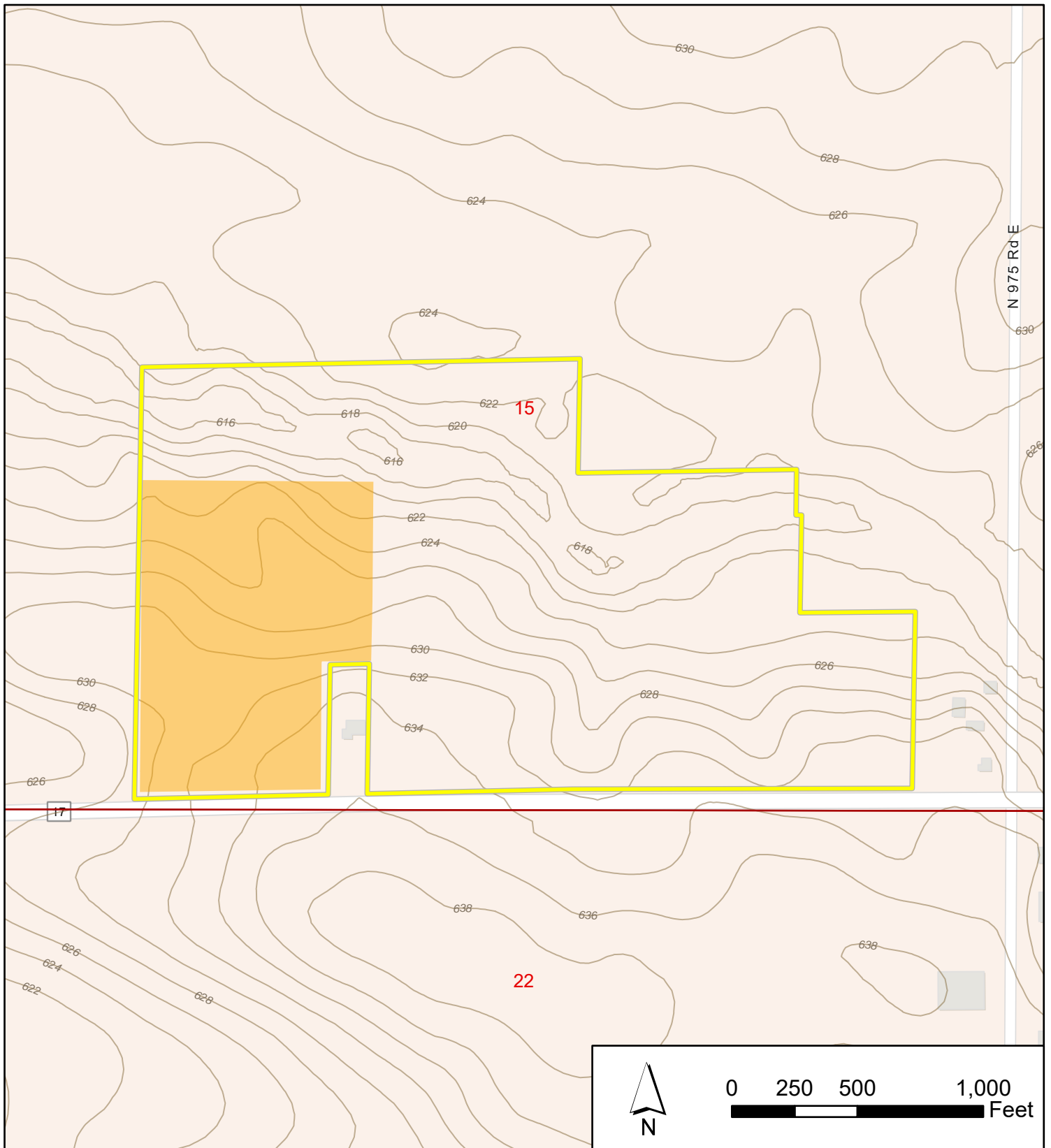
115 WEST HACK ST. - P.O. BOX 336 - CULLOM, IL 60929
PHONE (815) 676-0999 ~ FAX (815) 676-4999

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DISTANCES ARE MARKED IN FEET AND DECIMALS

ORDER NO.: 200649

ORDERED BY: MICHELLE PROKSA



USS Man Solar LLC

Livingston County, IL

US/SOLAR
100 N 6th St, Suite 410B
Minneapolis, MN 55403

- | | |
|------------------------|------------------------|
| Project Parcels | PLSS Section Boundary |
| Municipal Boundaries | 2 Ft Contours |
| PLSS Township Boundary | Approximate Fence Area |

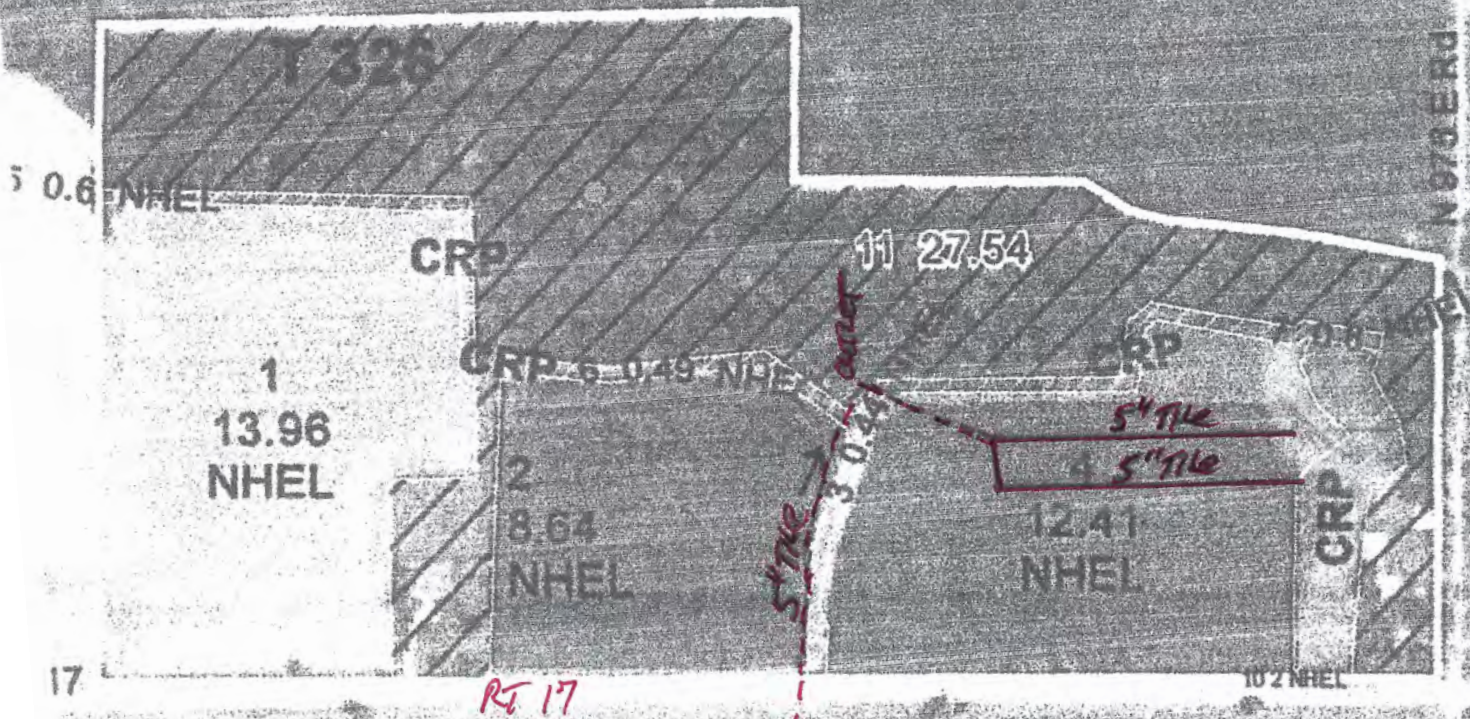
USGS Topography & Project Map

Map Data Sources: ESRI, USGS, OpenStreetMap, Garmin, Microsoft

N

N 973 E Rd

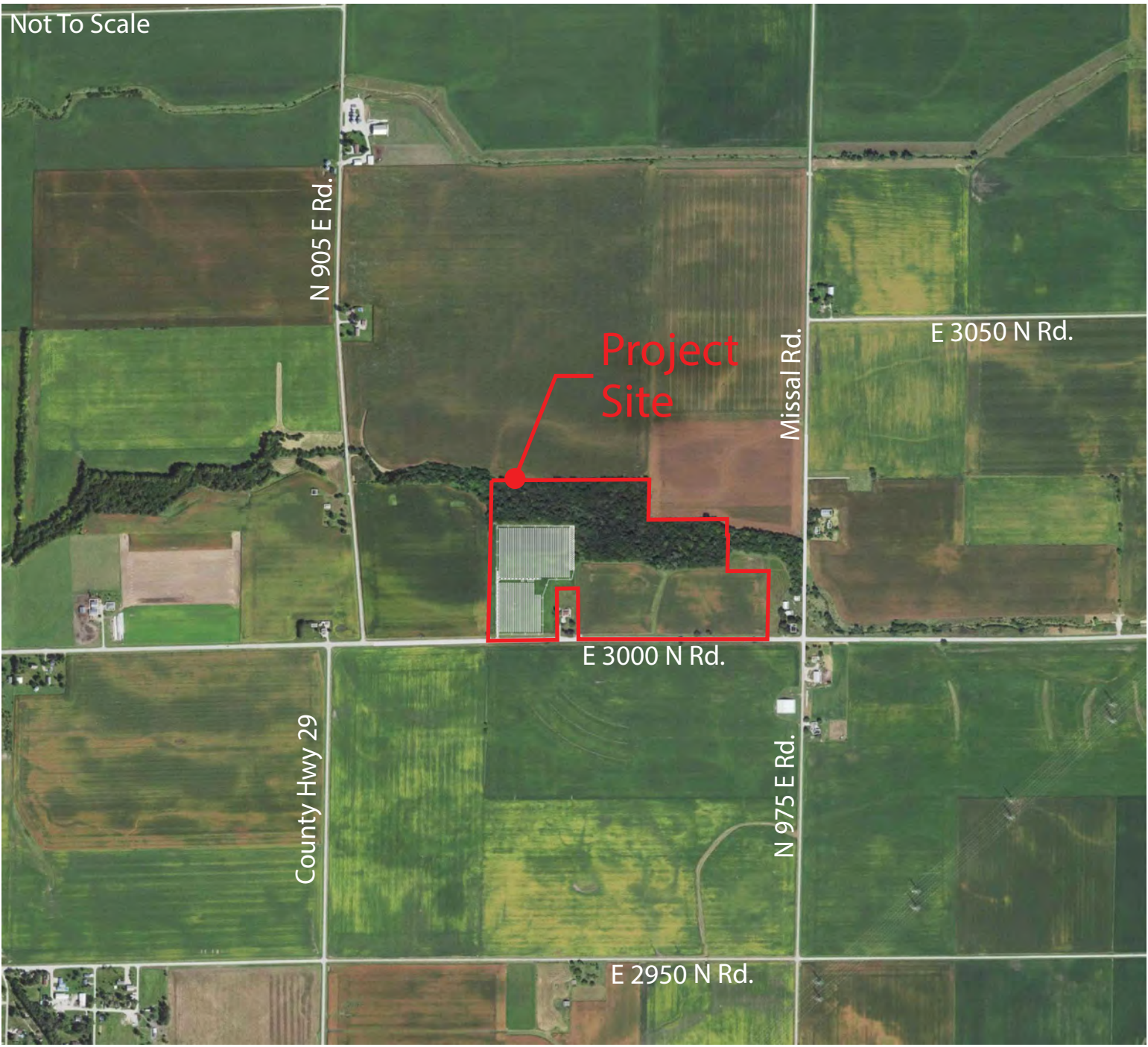
E 3000



COOKSA FARM

ILLUSTRATIVE CROSS-SECTION

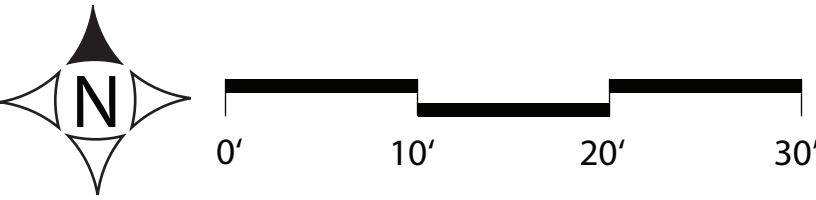
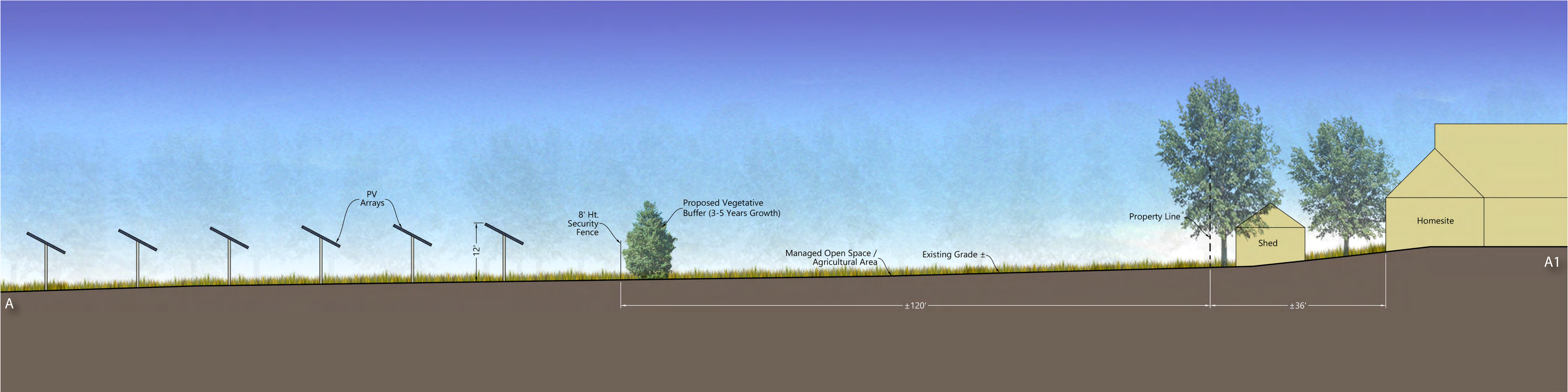
SITE LOCATION



SECTION LOCATION



SECTION A-A1



Westwood

Phone (952) 937-5150 12701 Whitewater Drive
Fax (952) 937-5822 Minnetonka, MN 55343
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.
08-10-2023 0037687

USS MAN SOLAR LLC
MANVILLE, ILLINOIS





U.S. Fish and Wildlife Service

National Wetlands Inventory

USS Man Solar - NWI



U.S. Fish and Wildlife Service, National Standards and Support Team,
wetlands_team@fws.gov

August 28, 2022

Wetlands



Estuarine and Marine Deepwater



Estuarine and Marine Wetland



Freshwater Emergent Wetland



Freshwater Forested/Shrub Wetland



Freshwater Pond



Lake



Other



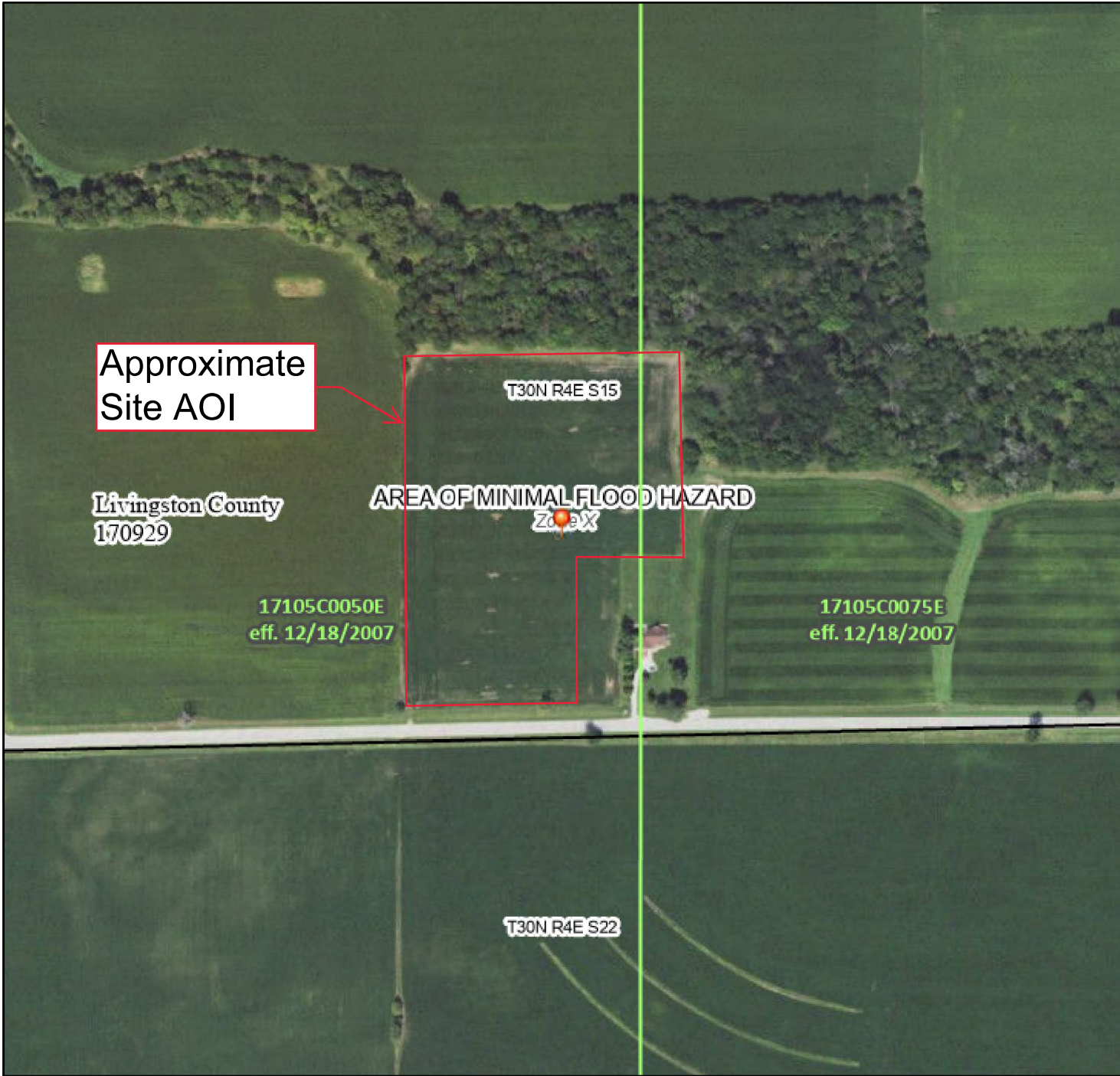
Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Flood Hazard Layer FIRMMette



88°45'21"W 41°4'3"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

88°44'44"W 41°3'36"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee, See Notes, Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/4/2023 at 5:46 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

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

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or flood plan management purposes when they are higher than the elevations shown on this FIRM.

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

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

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

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey. Digital orthoregistry with a spatial resolution of 0.5 meter ground sample distance were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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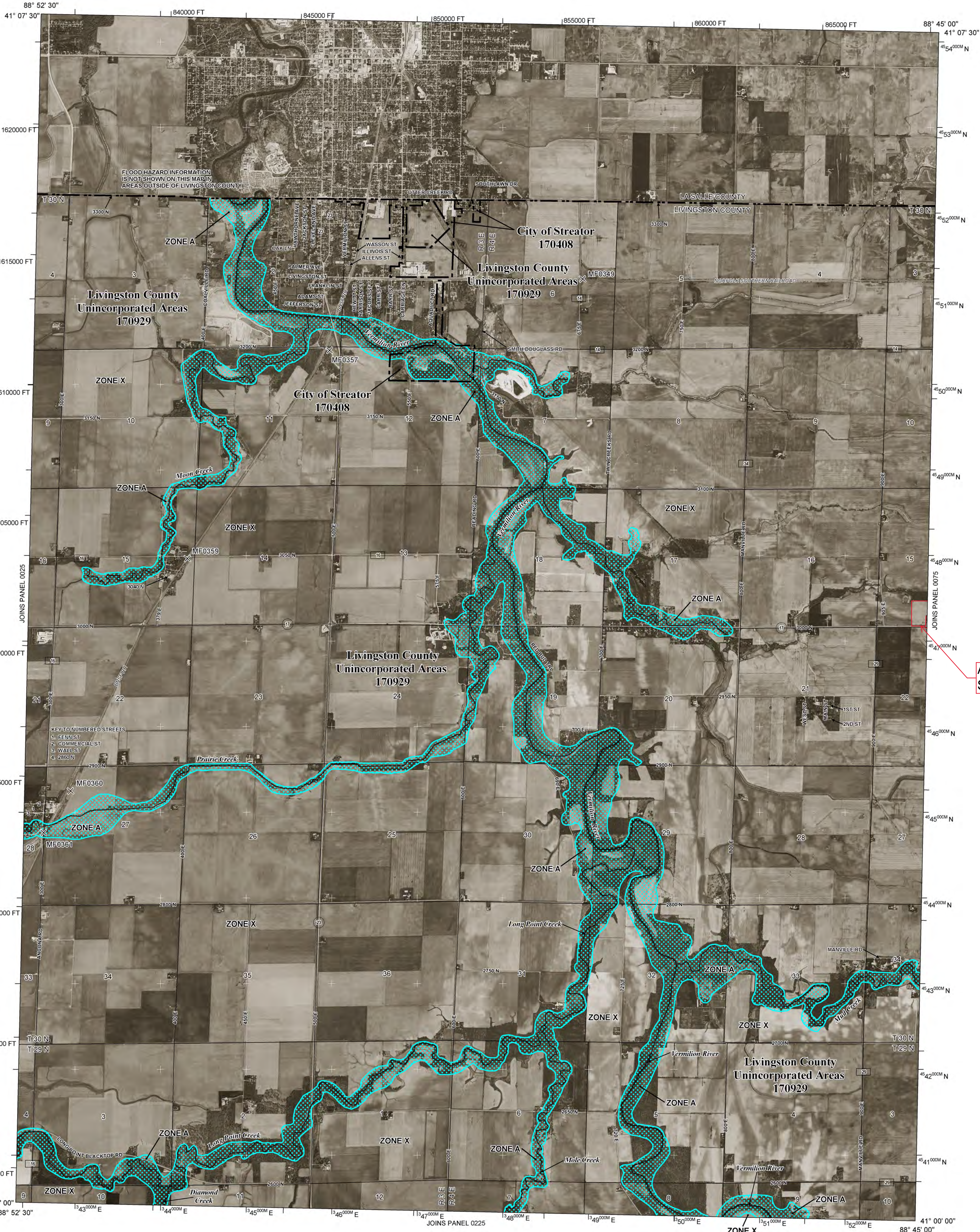
Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital version of this map. The FEMA Map Service Center may also be reached by fax at 1-800-358-9620 and its website at www.msc.fema.gov.

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PANEL INDEX



Panel Not Printed



Approximate Site AOI

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equal or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE D Areas determined to be outside the 0.2% annual chance floodplain.

ZONE X Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

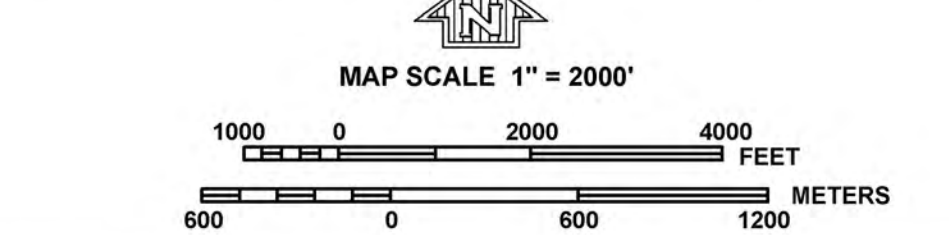
- 1% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

- *Referenced to the North American Vertical Datum of 1988
- A Cross section line
- 23 Transsect line
- 45° 02' 08", 93° 02' 12" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4589000M N 1000-meter Universal Transverse Mercator grid values, zone 16
- 15650000 FT 5000-foot grid tick; Illinois State Plane East Coordinate System, 3776-zone (FIPSZONE 1201) Transverse Mercator
- DX5510x Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

- MAP REPOSITORIES** Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP** DECEMBER 18, 2007
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**

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

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



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0050E

FIRM
FLOOD INSURANCE RATE MAP
LIVINGSTON COUNTY,
ILLINOIS
AND INCORPORATED AREAS

PANEL 50 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY
LIVINGSTON COUNTY
STREATOR, CITY OF

NUMBER
170929
170408

PANEL
0050
0050

SUFFIX
E
E

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

MAP NUMBER
17105C0050E
EFFECTIVE DATE
DECEMBER 18, 2007
Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

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

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or flood plan management purposes when they are higher than the elevations shown on this FIRM.

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

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

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

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

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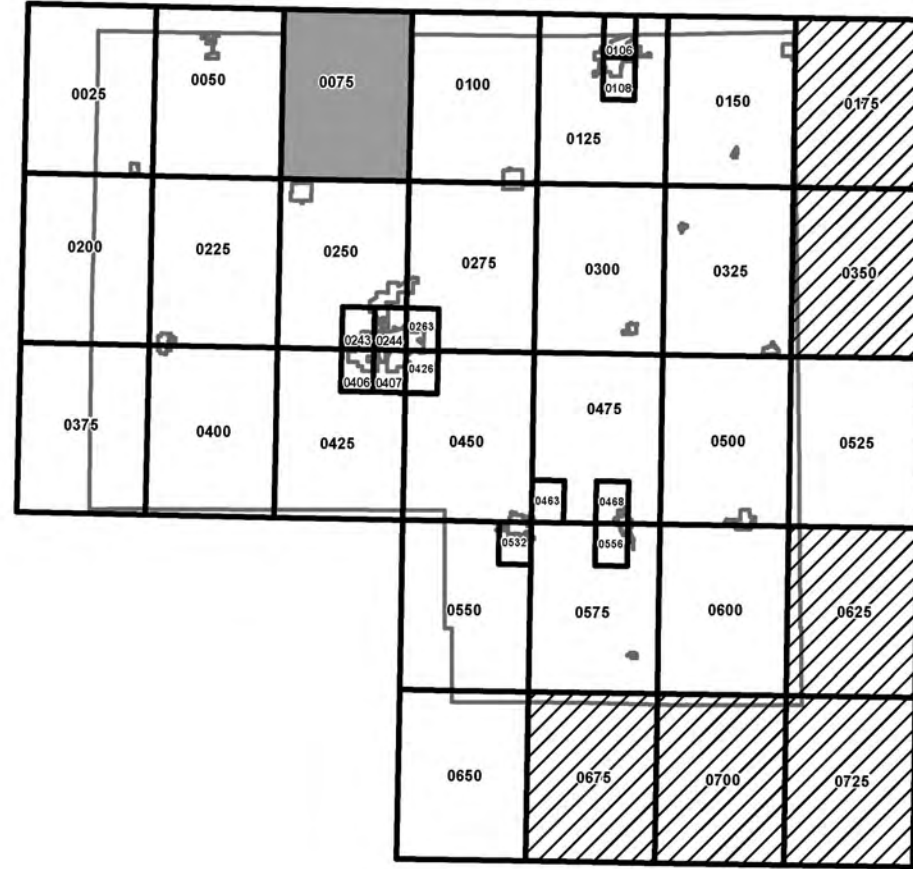
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PANEL INDEX



Panel Not Printed



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ZONE AR
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ZONE A99
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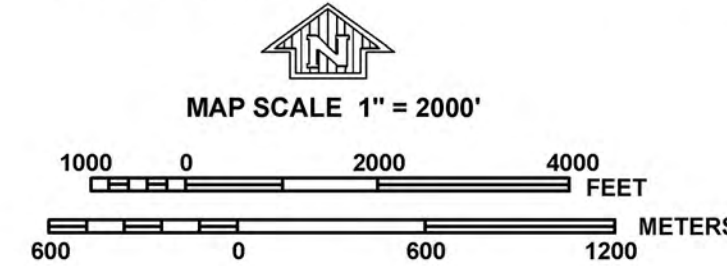
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DECEMBER 18, 2007
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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PANEL 0075E

FIRM
FLOOD INSURANCE RATE MAP
LIVINGSTON COUNTY, ILLINOIS
AND INCORPORATED AREAS

PANEL 75 OF 725
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:
COMMUNITY **NUMBER** **PANEL** **SUFFIX**
LIVINGSTON COUNTY 170929 0075 E

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

MAP NUMBER
17105C0075E
EFFECTIVE DATE
DECEMBER 18, 2007

Federal Emergency Management Agency

APPENDIX II – MEMORANDUM OF LEASE AGREEMENT

Lessor: Michelle Proksa

Lessee: US Solar Development LLC

Note: US Solar Development LLC is a wholly owned subsidiary of United States Solar Corporation. Prior to construction, US Solar Development LLC will assign the lease to USS Man Solar LLC, the SUP applicant and project company.

2022R-02527

**COUNTY CLERK & RECORDER
LIVINGSTON COUNTY**

**RECORDED ON:
06/02/2022 02:11:50 PM
KRISTY A MASCHING
COUNTY CLERK & RECORDER**

RECORDER'S AUTOMATION FEE	12.00
GIS MAINTENANCE FEE	20.00
RHSPS FEE	9.00
RECORDING FEE	17.00
DOC STORAGE FEE	5.00

PAGES: 12

_____(Top 3 inches Reserved for Recording Data)_____

MEMORANDUM OF LEASE AND SOLAR EASEMENT

THIS MEMORANDUM OF OPTION TO LEASE, LEASE AND SOLAR EASEMENT (this "Memorandum"), dated as of May 20, 2022 (the "Effective Date"), is made by and between, Michelle A. Proksa, a married person, whose address is 1308 Van Buren, Streator, IL 61364 ("**Lessor**") and **US SOLAR DEVELOPMENT LLC**, a Delaware limited liability company, whose address is 100 N 6th St., Suite 410B, Minneapolis, MN 55403 ("**Lessee**").

A. Lessor is the owner of real property located in Livingston County, Illinois, that is legally described in Exhibit A (the "**Lessor Property**").

B. Lessor and Lessee have entered into that certain Option to Lease, Lease and Solar Easement (the "**Lease**"), having an effective date of May 20, 2022, whereby Lessor leases to Lessee and Lessee leases from Lessor a portion of the Lessor Property (the "**Premises**") described in Exhibit A and whereby Lessor grants to Lessee certain easements described in Exhibit A and Exhibit B, in each case for the purposes of the Facility (as defined below).

C. Lessor and Lessee wish to give record notice of the existence of the Lease.

D. The Lease is exempt from Illinois realty transfer tax under 35 ILCS 200/31-45.

NOW THEREFORE, in consideration sum of One Dollar (\$1.00), the parties agree as follows:

1. PURPOSE OF LEASE. THE LEASE IS SOLELY FOR SOLAR PHOTOVOLTAIC ENERGY GENERATION AND RELATED PURPOSES, AND THROUGHOUT THE TERM OF THE

LEASE, LESSEE SHALL HAVE THE SOLE AND EXCLUSIVE RIGHT TO USE THE LESSOR PROPERTY FOR SUCH PURPOSES. FOR PURPOSES OF THE LEASE, PHOTOVOLTAIC ENERGY GENERATION PURPOSES MEANS: (I) MONITORING, TESTING AND ASSESSING THE LESSOR PROPERTY FOR SOLAR PHOTOVOLTAIC ENERGY GENERATION, AND (II) DEVELOPING, CONSTRUCTING , INSTALLING, OPERATING, MAINTAINING, REPAIRING, AND REPLACING PHOTOVOLTAIC ELECTRIC ENERGY GENERATING EQUIPMENT, SUPPORTING STRUCTURES AND BALLASTS, INVERTERS, ELECTRICAL STORAGE AND TRANSFORMERS, FIXTURES, ELECTRIC DISTRIBUTION LINES, COMMUNICATION LINES, METERING EQUIPMENT, PERIMETER FENCING, INTERCONNECTION FACILITIES AND RELATED FACILITIES AND EQUIPMENT (COLLECTIVELY, THE "FACILITY") ON THE LESSOR PROPERTY. ANY IMPROVEMENTS, FIXTURES OR STRUCTURES THAT ARE NOT A PART OF THE FACILITY SHALL NOT BE INSTALLED ON THE LESSOR PROPERTY WITHOUT THE EXPRESS WRITTEN CONSENT OF LESSOR.

2. COMMERCIAL OPERATION DATE; TERM; RENEWAL TERMS. THE TERM OF THE LEASE ("TERM") SHALL COMMENCE UPON THE EFFECTIVE DATE AND CONTINUE UNTIL 11:59 PM ON THE TWENTIETH (20TH) ANNIVERSARY OF THE COMMERCIAL OPERATION DATE. THE "COMMERCIAL OPERATION DATE" SHALL BE THE FIRST DAY OF THE FIRST FULL MONTH AFTER THE FACILITY COMMENCES COMMERCIAL PRODUCTION AND SALE OF ELECTRICITY UNDER ANY CONTRACT OR AGREEMENT OR OTHER ARRANGEMENT PURSUANT TO WHICH LESSEE SELLS THE ELECTRICITY AND RELATED ENVIRONMENTAL ATTRIBUTES (AS DEFINED IN THE LEASE) TO ANY PURCHASER THEREOF. LESSEE HAS OPTIONS TO EXTEND THE INITIAL TERM OF THE LEASE FOR TWO ADDITIONAL FIVE (5) YEAR TERMS COMMENCING IMMEDIATELY ON THE DAY THAT THE TERM WOULD OTHERWISE EXPIRE.

3. SOLAR EASEMENT. THE LEASE GRANTS TO LESSEE, FOR THE TERM OF THE LEASE, AN EXCLUSIVE SOLAR EASEMENT TO USE ALL SUNLIGHT WHICH NATURALLY ARRIVES AT THE PREMISES, INCLUDING AN EXCLUSIVE EASEMENT PROHIBITING ANY OBSTRUCTION TO THE FREE FLOW OF SUNLIGHT TO THE PREMISES THROUGHOUT THE ENTIRE AREA OF THE LESSOR PROPERTY DESCRIBED IN EXHIBIT B OF THE LEASE (THE "SOLAR PREMISES"), WHICH SHALL CONSIST HORIZONTALLY THREE HUNDRED AND SIXTY DEGREES (360°) FROM ANY POINT WHERE ANY PHOTOVOLTAIC GENERATING FACILITY IS OR MAY BE LOCATED AT ANY TIME FROM TIME TO TIME (EACH SUCH LOCATION REFERRED TO AS A "SOLAR SITE") AND FOR A DISTANCE FROM EACH SOLAR SITE TO THE BOUNDARIES OF THE SOLAR PREMISES, TOGETHER VERTICALLY THROUGH ALL SPACE LOCATED ABOVE THE SURFACE OF THE SOLAR PREMISES, THAT IS, ONE HUNDRED EIGHTY DEGREES (180°) OR SUCH GREATER NUMBER OR NUMBERS OF DEGREES AS MAY BE NECESSARY TO EXTEND FROM EACH POINT ON AND ALONG A LINE DRAWN ALONG THE PLANE FROM EACH POINT ALONG THE EXTERIOR BOUNDARY OF THE SOLAR PREMISES THROUGH EACH SOLAR SITE TO EACH POINT AND ON AND ALONG SUCH LINE TO THE OPPOSITE EXTERIOR BOUNDARY OF THE SOLAR PREMISES.

4. OTHER EASEMENTS. THE LEASE GRANTS TO LESSEE, FOR THE TERM OF THE LEASE, THE FOLLOWING EASEMENTS OVER, ACROSS AND ON THE LESSOR PROPERTY (A) A NON-EXCLUSIVE EASEMENT ("ACCESS EASEMENT") ON AND THROUGH THE LESSOR PROPERTY FOR PURPOSES OF LESSEE'S ACCESS TO THE FACILITY ON THE PREMISES, WITHIN WHICH LESSEE MAY CONSTRUCT, USE AND/OR MAINTAIN A ROAD AT LESSEE'S EXPENSE; (B) A NON-EXCLUSIVE EASEMENT ON AND THROUGH THAT PORTION OF THE LESSOR PROPERTY CONSISTING OF THE DISTRIBUTION EASEMENT (AS DEFINED IN THE LEASE) FOR THE PURPOSE OF INSTALLING, OPERATING AND MAINTAINING AN ELECTRIC DISTRIBUTION LINE AND RELATED COMMUNICATION LINES BETWEEN THE FACILITY AND ELECTRICAL FACILITIES OWNED BY CERTAIN PURCHASERS OF ELECTRICITY AND RELATED ENVIRONMENTAL ATTRIBUTES; AND (C) AN EASEMENT AND LICENSE FOR THE FACILITY TO CREATE, CAUSE, INCREASE, ACCENTUATE, OR OTHERWISE CONTRIBUTE TO THE OCCURRENCE OF LIGHT, SHADOWS, SHADOW AND LIGHT FLICKERING, GLARE AND REFLECTION, ON AND ACROSS THE LESSOR PROPERTY. UNDER THE TERMS OF THE LEASE, LESSEE SHALL ALSO BE ENTITLED TO INGRESS AND EGRESS TO AND FROM ITS FACILITY AND APPURTENANT EQUIPMENT AND ELECTRICAL POWER LINES OVER THE PREMISES AND SUCH ADDITIONAL AREAS OF THE LESSOR PROPERTY AS SHALL BE REASONABLY NECESSARY TO ACCESS A PUBLIC ROADWAY OR ALLEY.

5. OWNERSHIP OF LESSEE'S IMPROVEMENTS; DISCLAIMER OF TITLE TO ENVIRONMENTAL ATTRIBUTES. THE FACILITY AND RELATED EQUIPMENT CONSTRUCTED, INSTALLED OR PLACED ON THE PREMISES AND WITHIN THE ACCESS EASEMENT, DISTRIBUTION EASEMENT AND UTILITY EASEMENT BY LESSEE PURSUANT TO THE LEASE SHALL BE THE SOLE PROPERTY OF LESSEE, AND LESSOR AGREES THAT IT SHALL HAVE NO OWNERSHIP OR OTHER INTEREST IN THE FACILITY AND RELATED EQUIPMENT OWNED BY LESSEE ON THE PREMISES OR WITHIN THE ACCESS EASEMENT, DISTRIBUTION EASEMENT AND UTILITY EASEMENT. THE FACILITY IS AND SHALL REMAIN PERSONAL PROPERTY OF THE LESSEE, NOTWITHSTANDING ANY PRESENT OR FUTURE COMMON OWNERSHIP OF THE FACILITY AND THE PREMISES, AND IRRESPECTIVE OF WHETHER ANY OF THE FACILITY IS DEEMED TO BE A FIXTURE OR OTHERWISE PART OF THE LESSOR PROPERTY OR ANY IMPROVEMENTS ON THE LESSOR PROPERTY, AND LESSOR ACKNOWLEDGES THAT THE FACILITY IS AND SHALL REMAIN PERSONAL PROPERTY OF LESSEE IRRESPECTIVE OF THE MANNER OF ITS ATTACHMENT OR CONNECTION TO THE LESSOR PROPERTY. LESSOR ACKNOWLEDGES THAT LESSEE'S LENDERS MAY REQUEST A FIRST PRIORITY SECURITY INTEREST IN THE FACILITY AS COLLATERAL FOR FINANCING OF THE FACILITY, AND LESSOR CONSENTS TO THE GRANT BY LESSEE OF SUCH A SECURITY INTEREST, AND THE FILING OF INSTRUMENTS NECESSARY TO PERFECT SUCH A SECURITY INTEREST UNDER THE UNIFORM COMMERCIAL CODE IN THE FACILITY AS PERSONAL PROPERTY OF THE LESSEE. LESSOR AGREES THAT ALL ENVIRONMENTAL ATTRIBUTES REMAIN THE PROPERTY OF LESSEE IRRESPECTIVE OF WHETHER LESSOR CONSUMES OR USES ANY OF THE ELECTRICITY GENERATED BY THE FACILITY, AND LESSOR HAS NO TITLE OR RIGHT TO ANY SUCH ENVIRONMENTAL ATTRIBUTES RELATED TO, ARISING FROM OR ASSOCIATED WITH THE FACILITY OR ANY ELECTRICAL CAPACITY OR ENERGY CREATED BY THE FACILITY. ANY

GRANT, REBATE, INCENTIVE PAYMENT, TAX CREDIT OR ANY OTHER CREDIT, VALUE, TAX OR OTHER BENEFIT ARISING FROM OR ASSOCIATED WITH THE INSTALLATION OR OWNERSHIP OF THE FACILITY OR THE PRODUCTION OF ENERGY AND CAPACITY BY THE FACILITY SHALL INURE TO THE EXCLUSIVE BENEFIT OF LESSEE.

6. RIGHT TO ENCUMBER; ASSIGNMENT. LESSEE MAY AT ANY TIME MORTGAGE, PLEDGE OR ENCUMBER ALL OR ANY PART OF ITS INTEREST IN THE LEASE AND RIGHTS UNDER THE LEASE AND/OR ENTER INTO A COLLATERAL ASSIGNMENT OF ALL OR ANY PART OF ITS INTEREST IN THE LEASE OR RIGHTS UNDER THE LEASE TO ANY ENTITY WITHOUT THE CONSENT OF LESSOR. LESSEE MAY ASSIGN, SUBLEASE, TRANSFER OR CONVEY ITS INTERESTS IN THE LEASE TO AN AFFILIATE OR SUBSIDIARY OF LESSEE WHICH WILL OWN, LEASE OR OTHERWISE CONTROL THE FACILITY, OR AN ENTITY THROUGH WHICH SUCCEEDS TO ALL OR SUBSTANTIALLY ALL LESSEE'S ASSETS, WITHOUT LESSOR'S CONSENT. LESSEE MAY ALSO ASSIGN, SUBLEASE, TRANSFER OR CONVEY ITS INTERESTS IN THE LEASE TO A THIRD PARTY WITHOUT LESSOR'S CONSENT, SUBJECT TO THE CONDITIONS SET FORTH IN THE LEASE. LESSOR ACKNOWLEDGES THAT IT MAY NOT SELL, TRANSFER, LEASE, ASSIGN, MORTGAGE, OR OTHERWISE ENCUMBER THE FACILITY OR LESSEE'S INTEREST IN THE LEASE AND RELATED EASEMENTS, AND ANY SALE OR CONVEYANCE OF THE LESSOR PROPERTY OR LESSOR IMPROVEMENTS SHALL BE SUBJECT TO THE LEASEHOLD AND EASEMENT INTERESTS OF LESSEE IN THE LEASE.

7. CONTINUING NATURE OF OBLIGATIONS. THE BURDENS OF THE EASEMENTS AND ALL OTHER RIGHTS GRANTED TO LESSEE IN THE LEASE RUN WITH AND AGAINST THE LEASE PREMISES AND THE LESSOR PROPERTY AND ARE A CHARGE AND BURDEN ON THE LEASE PREMISES AND THE LESSOR PROPERTY AND ARE BINDING UPON AND AGAINST LESSOR AND ITS SUCCESSORS, ASSIGNS, PERMITTEES, LICENSEES, LESSEES, EMPLOYEES AND AGENTS. THE LEASE PREMISES, INCLUDING THE EASEMENTS AND ALL OTHER RIGHTS GRANTED TO LESSEE IN THE LEASE, INURE TO THE BENEFIT OF LESSEE AND ITS SUCCESSORS, ASSIGNS, PERMITTEES, LICENSEES AND LESSEES. ANY SALE OR CONVEYANCE OF THE LESSOR PROPERTY OR LESSOR IMPROVEMENTS IS SUBJECT TO THE LEASEHOLD AND EASEMENT INTERESTS OF LESSEE IN THE LEASE.

8. LANDOWNER ACTIVITIES. LESSOR USES THE LESSOR PROPERTY FOR AGRICULTURAL PURPOSES. LESSEE RESERVES THE RIGHT TO RELOCATE OR RECONFIGURE THE FACILITY UPON THE PREMISES DURING THE TERM OF THIS LEASE. LESSEE AGREES TO COOPERATE WITH LESSOR TO LOCATE THE FACILITY ON THE PREMISES IN A MANNER THAT MINIMIZES INTERFERENCE WITH AGRICULTURAL OR BUSINESS OPERATIONS OF LESSOR OR LESSOR'S TENANTS, TO THE EXTENT CONSISTENT WITH LESSEE'S PLANNED USE OF THE PREMISES.

9. PURPOSE OF THIS MEMORANDUM. THIS MEMORANDUM HAS BEEN EXECUTED, DELIVERED AND RECORDED FOR THE PURPOSE OF GIVING NOTICE OF THE LEASE, EASEMENTS, AND OTHER RIGHTS IN ACCORDANCE WITH THE TERMS, COVENANTS

AND CONDITIONS OF THE LEASE. THE TERMS AND CONDITIONS OF THE LEASE ARE INCORPORATED BY REFERENCE INTO THIS MEMORANDUM AS IF SET FORTH FULLY HEREIN AT LENGTH. IN THE EVENT OF ANY CONFLICT BETWEEN THE TERMS AND PROVISIONS OF THE LEASE AND THIS MEMORANDUM, THE LEASE SHALL CONTROL.

[Signature pages follow]

IN WITNESS WHEREOF, each of the parties hereto has executed and delivered this Memorandum as of the day and year first above written.

LESSEE: US SOLAR DEVELOPMENT LLC,
a Delaware limited liability company

By: 

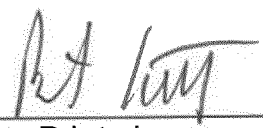
Name: Reed Richerson

Title: Vice President

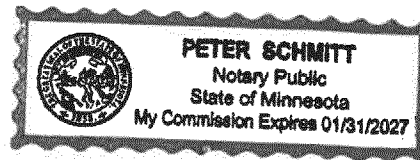
STATE OF MINNESOTA

COUNTY OF Hennepin

This instrument was acknowledged before me on 20 May 2022
by Reed Richerson, the Vice President of US Solar Development LLC, a Delaware limited liability company, on behalf of the company


Name Printed: Peter Schmitt

(SEAL)



By: Michelle Proksa 4-25-22

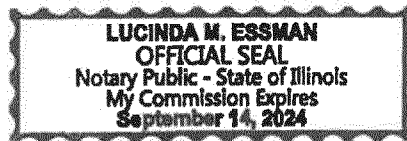
Name: Michelle A. Proksa

STATE OF Illinois

COUNTY OF Livingston

The foregoing instrument was acknowledged before me on April 25 2022 by Michelle A. Proksa, a married person.

Lucinda M. Essman
Name Printed: Lucinda Essman



(SEAL)

THIS INSTRUMENT DRAFTED BY AND
WHEN RECORDED, RETURN TO:

Bruce A. Bedwell. Esq.
United States Solar Corporation
100 N 6th St, Suite 410B
Minneapolis, MN 55403
612.260.2230

EXHIBIT A TO
MEMORANDUM OF LEASE AND SOLAR EASEMENT

Lessor Property, Lease Premises, Access Easement, Distribution Easement and
Utility Easement

1. Lessor Property: One tract in Livingston County, Illinois described as follows:

Property ID: 0215300007

Deeded Acreage:

Legal Description:

The Southeast Quarter (SE $\frac{1}{4}$) of the Southwest Quarter (SW $\frac{1}{4}$); and the South fifteen (S 15) acres of the West half (W $\frac{1}{2}$) of the Southwest Quarter (SW $\frac{1}{4}$) of the Southeast Quarter (SE $\frac{1}{4}$) all in Section Fifteen (15), Township Thirty (30) North, Range Four (4) East of the Third Principal Meridian containing 55 acres more or less.

The Southeast corner (SE) of the West half (W $\frac{1}{2}$) of the Southeast Quarter (SE $\frac{1}{4}$) of Section 15, Township 30 North, Range 4, East of the Third Principal Meridian, more particularly described as follows:

Beginning at the Southeast corner of the West Half (W $\frac{1}{2}$) of the Southeast Quarter (SE $\frac{1}{4}$) of said Section 15, in Township 30 North, Range 4, East of the Third Principal Meridian, Thence West 40 Rods, Thence North 54 Rods and 4 Feet; Thence Southeast 5 and $\frac{3}{4}$ S Degrees 40 and $\frac{1}{5}$ Rods and 4 Feet; Thence South to the Place of Beginning.

Excepting therefrom that portion of land conveyed by Daniel J. Hayley and Ana Hayley, husband and wife to Keith Mc Elroy and Susan Mc Elroy, husband and wife, not in tenancy in common but in joint tenancy by deed recorded January 16, 1992, in Document No. 450225 of Official Records.

LESS & EXCEPT

A PART OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER IN ✓
SECTION 15, TOWNSHIP 30 NORTH, RANGE 4 EAST OF THE THIRD PRINCIPAL
MERIDIAN, LIVINGSTON COUNTY, ILLINOIS, BOUNDED AND DESCRIBED AS
FOLLOWS: BEGINNING AT THE SOUTHEAST CORNER OF SAID SOUTHWEST
QUARTER OF THE SOUTHEAST QUARTER AND RUNNING THENCE SOUTH 89°46'00"
WEST, ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER OF THE
SOUTHEAST QUARTER, 302.00 FEET; THENCE NORTH 01°16'17" EAST, PARALLEL
WITH THE EAST LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHEAST
QUARTER, 562.00 FEET; THENCE SOUTH 89°46'00" WEST, PARALLEL WITH SAID
SOUTH LINE, 346.46 FEET; THENCE NORTH 01°16'17" EAST, PARALLEL WITH SAID
EAST LINE OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER, 300.82
FEET, TO A POINT ON THE SOUTH LINE OF A TRACT OF LAND CONVEYED BY
WARRANTY DEED RECORDED AS DOCUMENT NO. 540869 IN THE OFFICE
OF THE LIVINGSTON COUNTY RECORDER; THENCE NORTH 89°38'53" EAST, ALONG
SAID SOUTH LINE BEING PARALLEL WITH THE NORTH LINE OF SAID SOUTHWEST
QUARTER OF THE SOUTHEAST QUARTER, 648.49 FEET, TO A POINT ON SAID EAST
LINE OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER; AND THENCE
SOUTH 01°16'17" WEST, ALONG SAID EAST LINE, 864.17 FEET TO THE POINT OF
BEGINNING.

Lessor gives Lessee permission to input the full legal description for the Lessor
Property after the Effective Date.

2. Lease Premises: Up to 30 acres of the one tract comprising the Lessor Property
as described above. Approximate depiction of the Lease Premises (orange) is
shown below. Precise legal description of the Lease Premises to be added
following Effective Date pursuant to Section 2.4 of the Agreement. The Lessor
requests that the Lessee provide a minimum of a fifty foot (50') setback off of the
west property line to allow Lessor access to the north end of the property. The
Lessor request that if the Lease Premises wraps around the residence on the
southwest end of the parcel, that landscaping be added to screen it from the solar
garden.

3. Access Easement: Approximate depiction of the Access Easement (green) is
shown below. Precise legal description of the Access Easement to be added
following Effective Date pursuant to Section 2.4 of the Agreement.

4. Distribution Easement: Approximate depiction of the Distribution Easement
(red) is shown below. Precise legal description of the Distribution Easement to be
added following Effective Date pursuant to Section 2.4 of the Agreement.

5. Utility Easement: Approximate depiction of the Utility Easement (blue) is shown below. Precise legal description of the Utility Easement to be added following Effective Date pursuant to Section 2.4 of the Agreement.

EXHIBIT A CONT.

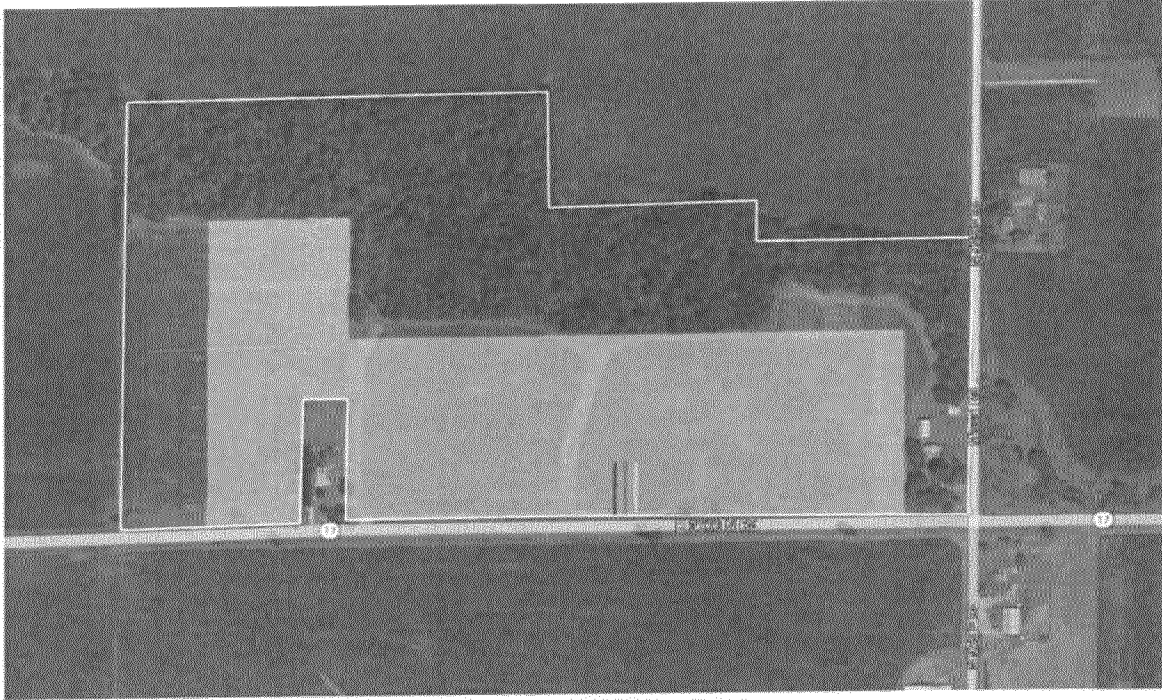


EXHIBIT B TO
MEMORANDUM OF LEASE AND SOLAR EASEMENT
Description of Solar Premises

1. Solar Premises.

Same as Lease Premises as described above in Exhibit A.

APPENDIX III – ECOCAT CONSULTATION

Applicant: United States Solar Corp.
Contact: Ryan Magnoni
Address: 100 N. 6th St.
Suite 410B
Minneapolis, MN 55403

IDNR Project Number: 2402387
Date: 08/07/2023

Project: USS Man Solar LLC
Address: E 3000 N Road, Manville

Description: Develop, construct, and operate a community solar garden.

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:

Upland Sandpiper (*Bartramia longicauda*)

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: Livingston

Township, Range, Section:
30N, 4E, 15



IL Department of Natural Resources
Contact
Kyle Burkwald
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
Livingston County
Jesse King
112 W. Madison St.
Pontiac, Illinois 61764

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

August 09, 2023

Ryan Magnoni
United States Solar Corp.
100 N. 6th St.
Suite 410B
Minneapolis, MN 55403

RE: USS Man Solar LLC
Project Number(s): 2402387
County: Livingston

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 is terminated.

However, the Department recommends the following:

The project proponent should establish pollinator-friendly habitat as groundcover wherever feasible. Solar Site Pollinator Establishment Guidelines can be found here:
<https://dnr.illinois.gov/conservation/pollinatorscorecard.html>

The site should be de-compacted before planting. Long term management of the site should be planned for prior to development to ensure successful native pollinator habitat establishment for the lifetime of this project. An experienced ecological management consultant should be considered to assist with long-term management.

Required fencing, excluding areas near or adjacent to public access areas (e.g., roads, parking areas, trails, etc.), should not exceed 6 feet in height and should have a 6-inch gap along the bottom to prevent the restriction of wildlife movement.

Required night lighting should follow International Dark-Sky Association (IDA) guidance to minimize the effect of light pollution on wildlife.



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

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

The natural resource review reflects the information existing in the Illinois Natural Heritage Database 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.

Bradley Hayes
Division of Ecosystems and Environment
217-785-5500

APPENDIX IV – LIVINGSTON COUNTY CUSTOM SOIL RESOURCE REPORT



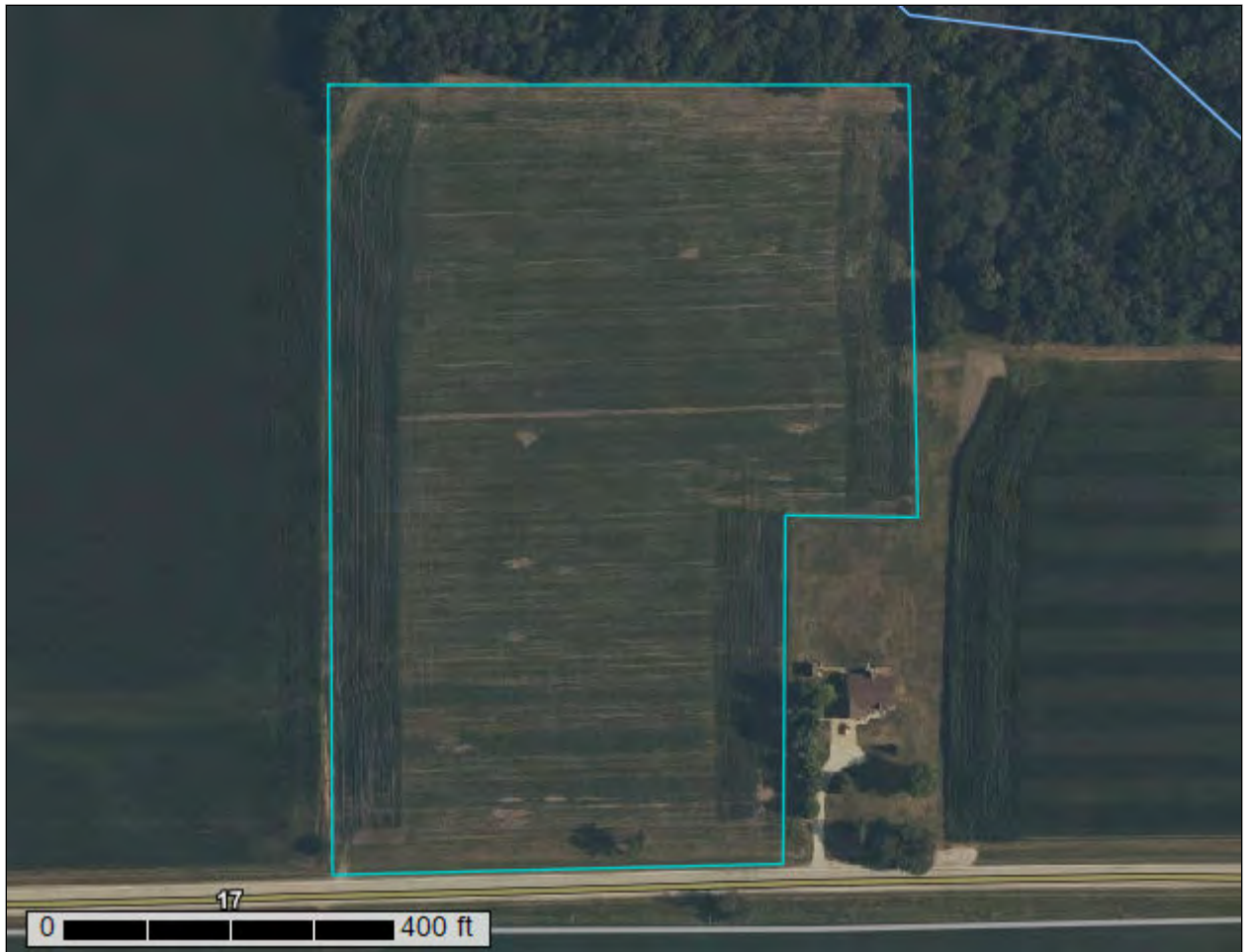
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Livingston County, Illinois



August 4, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map




MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Livingston County, Illinois
Survey Area Data: Version 17, Aug 31, 2022

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

Date(s) aerial images were photographed: Aug 3, 2019—Aug 24, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
91A	Swygert silty clay loam, 0 to 2 percent slopes	6.3	45.8%
91B2	Swygert silty clay loam, 2 to 4 percent slopes, eroded	5.9	42.6%
235A	Bryce silty clay, 0 to 2 percent slopes	1.3	9.7%
448B2	Mona silt loam, 2 to 5 percent slopes, eroded	0.2	1.5%
3451A	Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	0.0	0.3%
Totals for Area of Interest		13.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Livingston County, Illinois

91A—Swygert silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t6zn
Elevation: 540 to 840 feet
Mean annual precipitation: 34 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 155 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Swygert and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swygert

Setting

Landform: Till plains, ground moraines, end moraines
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Thin mantle of loess over clayey lacustrine deposits over clayey till

Typical profile

Ap - 0 to 12 inches: silty clay loam
Bt1 - 12 to 26 inches: silty clay
2Bt2 - 26 to 51 inches: silty clay
2Cd - 51 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 35 to 55 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie
Hydric soil rating: No

Minor Components

Bryce, drained

Percent of map unit: 2 percent
Landform: End moraines, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Hydric soil rating: Yes

91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2st2l
Elevation: 540 to 840 feet
Mean annual precipitation: 34 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 155 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Swygert, eroded, and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swygert, Eroded

Setting

Landform: End moraines, ground moraines
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey lacustrine deposits over clayey till

Typical profile

Ap - 0 to 7 inches: silty clay loam
Bt1 - 7 to 30 inches: silty clay
2Bt2 - 30 to 48 inches: silty clay
2Cd - 48 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 35 to 51 inches to densic material
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)

Custom Soil Resource Report

Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie
Hydric soil rating: No

Minor Components

Bryce, drained

Percent of map unit: 2 percent
Landform: Ground moraines, end moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Hydric soil rating: Yes

235A—Bryce silty clay, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t6zp
Elevation: 540 to 770 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 155 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Bryce, drained, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bryce, Drained

Setting

Landform: Till-floored lake plains, glacial lakes (relict), ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, talf
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Clayey glaciolacustrine deposits over clayey till

Custom Soil Resource Report

Typical profile

Ap - 0 to 13 inches: silty clay
Btg - 13 to 45 inches: silty clay
2BCg - 45 to 58 inches: silty clay
2Cg - 58 to 66 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (0.2 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Orthents, clayey

Percent of map unit: 2 percent
Landform: Lake plains, ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F095XB010WI - Loamy and Clayey Upland
Hydric soil rating: No

Rantoul, drained

Percent of map unit: 2 percent
Landform: Depressions on till-floored lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit

Custom Soil Resource Report

Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

448B2—Mona silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 5y50
Elevation: 540 to 930 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 140 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Mona and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mona

Setting

Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess and loamy outwash over silty clay till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 31 inches: clay loam
H3 - 31 to 36 inches: silty clay
H4 - 36 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 32 to 54 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie
Hydric soil rating: No

Minor Components

Bryce

Percent of map unit: 5 percent
Landform: Ground moraines, glacial lakes (relict)
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Hydric soil rating: Yes

3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Map Unit Setting

National map unit symbol: 2ww9g
Elevation: 430 to 720 feet
Mean annual precipitation: 34 to 39 inches
Mean annual air temperature: 47 to 56 degrees F
Frost-free period: 158 to 172 days
Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Lawson, frequently flooded, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lawson, Frequently Flooded

Setting

Landform: Flood plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium

Typical profile

Ap - 0 to 14 inches: silt loam
A - 14 to 33 inches: silt loam
Cg - 33 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Custom Soil Resource Report

Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F108XA019IL - Silty Floodplain Forest, F110XY028IL - Silty-
Loamy Floodplain Forest
Hydric soil rating: No

Minor Components

Sawmill, frequently flooded

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R110XY029IL - Wet Floodplain Sedge Meadow, R108XA018IL -
Ponded Floodplain Marsh
Hydric soil rating: Yes

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APPENDIX V – COMPLETED AGRICULTURAL IMPACT MITIGATION AGREEMENT (AIMA)

STANDARD AGRICULTURAL IMPACT MITIGATION AGREEMENT

between
USS Man Solar LLC

and the
ILLINOIS DEPARTMENT OF AGRICULTURE
Pertaining to the Construction of a Commercial Solar Energy Facility
in
Livingston 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).

USS Man Solar LLC, hereafter referred to as Commercial Solar Energy Facility Owner, or simply as Facility Owner, plans to develop and/or operate a 2MWac Commercial Solar Energy Facility in Livingston County [GPS Coordinates: 41.063296, -88.747629], which will consist of up to 25.23 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	<p>A plan prepared by a Professional Engineer, at the Facility's expense, that includes:</p> <ol style="list-style-type: none">(1) the estimated Deconstruction cost, in current dollars at the time of filing, for the Facility, considering among other things:<ol style="list-style-type: none">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 USS Man 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 Livingston 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 ⁶


By Tess Reagan, General Counsel

801 E. Sangamon Avenue, 62702
State Fairgrounds, POB 19281 Springfield,
IL 62794-9281

May 18, 2023

USS Man Solar LLC

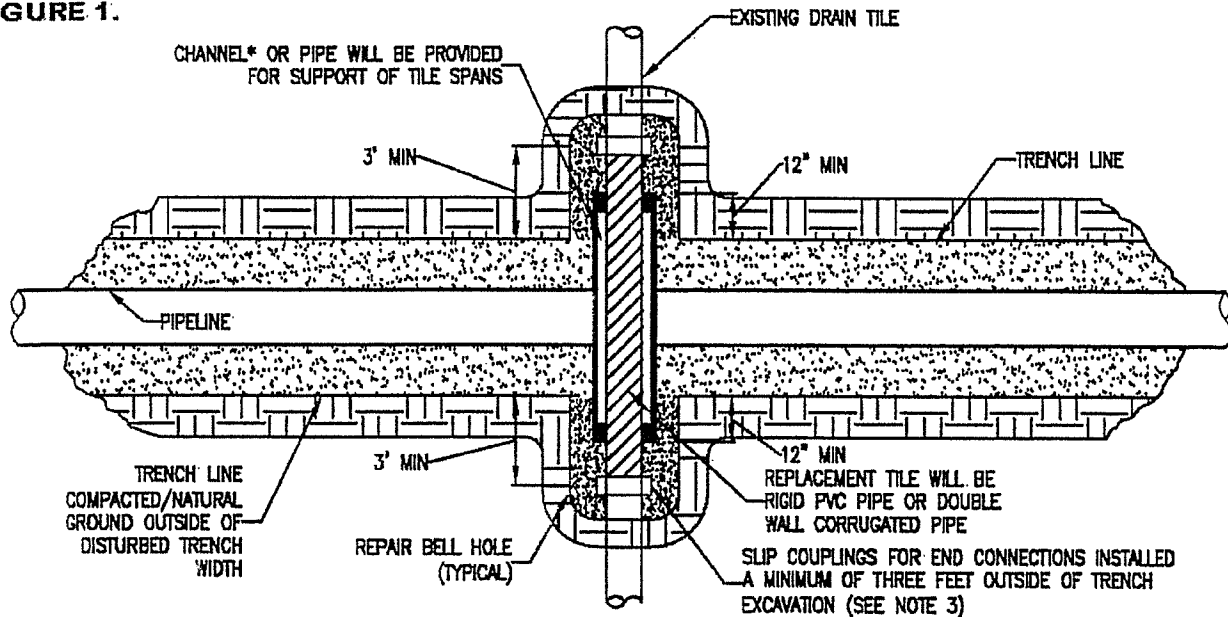

By Reed Richerson, President

100 N. 6th St., Suite 410B
Minneapolis, MN 55403

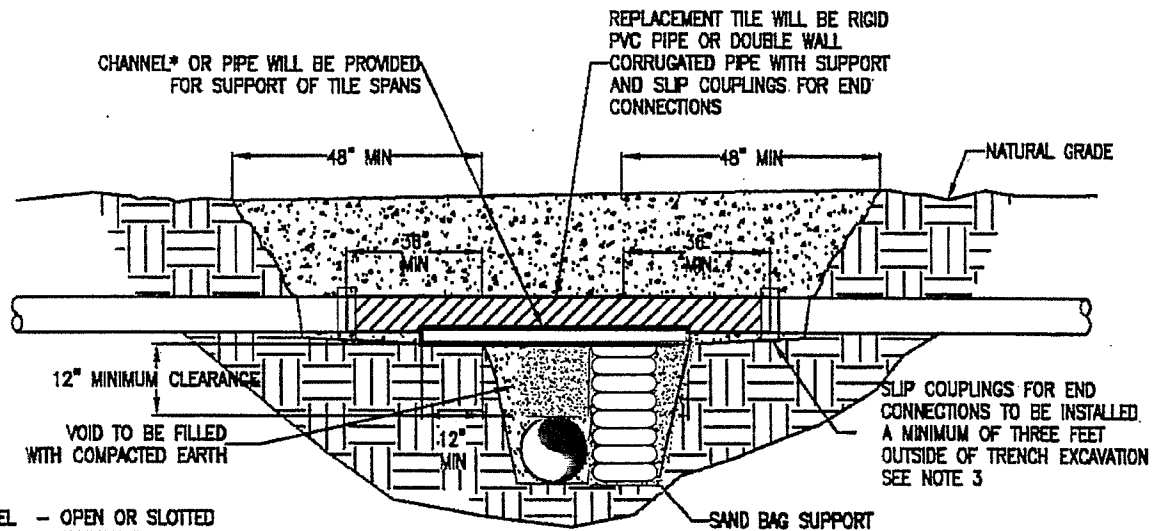
Address

May 15, 2023

FIGURE 1.



PLAN
N.T.S.



CROSS SECTION
N.T.S.

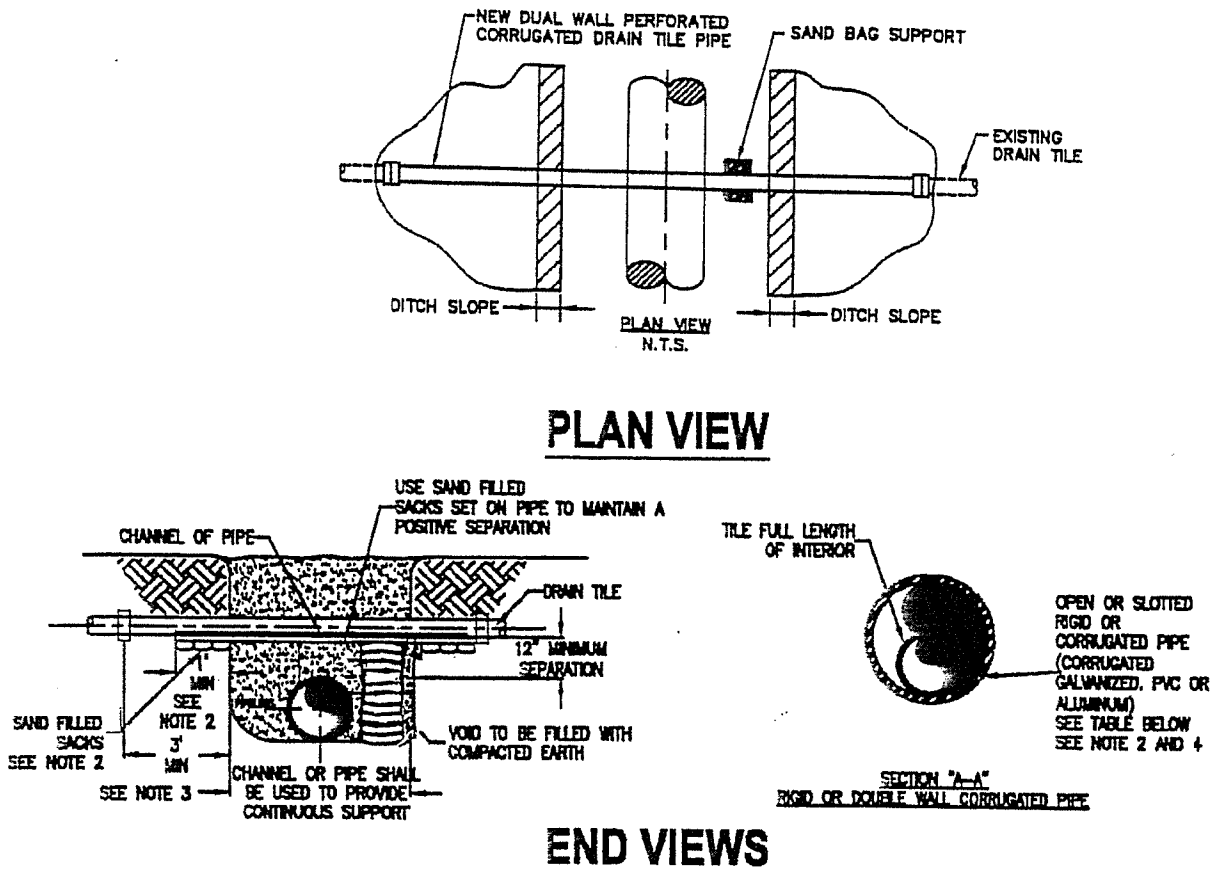
*CHANNEL - OPEN OR SLOTTED
CORRUGATED GALVANIZED, PVC OR
ALUMINUM CRADLE TO SUPPORT
DRAIN TILE.

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.



MINIMUM SUPPORT TABLE			
TILE SIZE	CHANNEL SIZE	PIPE SIZE	
3"	4" @ 5.4 #/ft	4"	STD. WT.
4"-5"	5" @ 8.7 #/ft	8"	STD. WT.
8"-9"	7" @ 9.8 #/ft	9"-10"	STD. WT.
10"	10" @ 15.3 #/ft	12"	STD. WT.

NOTE:

1. TILE REPAIR AND REPLACEMENT SHALL MAINTAIN ORIGINAL ALIGNMENT GRADIENT AND WATER FLOW TO THE GREATEST EXTENT POSSIBLE. IF THE TILE NEEDS TO BE RELOCATED, THE INSTALLATION ANGLE MAY VARY DUE TO SITE SPECIFIC CONDITIONS AND LANDOWNER RECOMMENDATIONS.
2. 1'-0" MINIMUM LENGTH OF CHANNEL OR RIGID PIPE (OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE) SHALL BE SUPPORTED BY UNDISTURBED SOIL, OR IF CROSSING IS NOT AT RIGHT ANGLES TO PIPELINE, EQUIVALENT LENGTH PERPENDICULAR TO TRENCH. SHIM WITH SAND BAGS TO UNDISTURBED SOIL FOR SUPPORT AND DRAINAGE GRADIENT MAINTENANCE (TYPICAL BOTH SIDES).
3. DRAIN TILES WILL BE PERMANENTLY CONNECTED TO EXISTING DRAIN TILES A MINIMUM OF THREE FEET OUTSIDE OF EXCAVATED TRENCH LINE USING INDUSTRY STANDARDS TO ENSURE PROPER SEAL OF REPAIRED DRAIN TILES INCLUDING SLP 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

APPENDIX VI – RESULTS FROM THE UNITED STATES FISH AND WILDLIFE SERVICE



United States Department of the Interior



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

In Reply Refer To:
Project Code: 2023-0114685
Project Name: USS Man Solar

August 09, 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 attached species list identifies federally threatened, endangered, proposed and candidate species that may occur within the boundary of your proposed project or may be affected by your proposed project. The list also includes designated critical habitat, if present, within your proposed project area or affected by your project. This list is provided to you as the initial step of the consultation process required under section 7(c) of the Endangered Species Act, also referred to as Section 7 Consultation.

Under 50 CFR 402.12(e) (the regulations that implement Section 7 of the Endangered Species Act) **the accuracy of this species list should be verified after 90 days**. This verification can be completed formally or informally. You may verify the list by visiting the ECOSPHERE Information for Planning and Consultation (IPaC) website <https://ipac.ecosphere.fws.gov> at regular intervals during project planning and implementation and completing the same process you used to receive the attached list.

Section 7 Consultation

Section 7 of the Endangered Species Act of 1973 requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the U.S. Fish and Wildlife Service (Service) if they determine their project "may affect" listed species or designated critical habitat. Under the ESA, it is the responsibility of the Federal action agency or its designated representative to determine if a proposed action may affect endangered, threatened, or proposed species, or designated critical habitat, and if so, to consult with the Service further. Similarly, it is the responsibility of the Federal action agency or project proponent, not the Service to make "no effect" determinations. If you determine that your proposed action will have

no effect on threatened or endangered species or their respective designated critical habitat, you do not need to seek concurrence with the Service.

Note: For some species or projects, IPaC will present you with *Determination Keys*. You may be able to use one or more Determination Keys to conclude consultation on your action.

Technical Assistance for Listed Species

1. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain information on the species life history, species status, current range, and other documents by selecting the species from the thumbnails or list view and visiting the species profile page.
-

No Effect Determinations for Listed Species

1. If there are *no* species or designated critical habitats on the Endangered Species portion of the species list: conclude "no species and no critical habitat present" and document your finding in your project records. No consultation under ESA section 7(a)(2) is required if the action would result in no effects to listed species or critical habitat. Maintain a copy of this letter and IPaC official species list for your records.
2. If any species or designated critical habitat are listed as potentially present in the **action area** of the proposed project the project proponents are responsible for determining if the proposed action will have "no effect" on any federally listed species or critical habitat. No effect, with respect to species, means that no individuals of a species will be exposed to any consequence of a federal action or that they will not respond to such exposure.
3. If the species habitat is not present within the action area or current data (surveys) for the species in the action area are negative: conclude "no species habitat or species present" and document your finding in your project records. For example, if the project area is located entirely within a "developed area" (an area that is already graveled/paved or supports structures and the only vegetation is limited to frequently mowed grass or conventional landscaping, is located within an existing maintained facility yard, or is in cultivated cropland conclude no species habitat present. Be careful when assessing actions that affect: 1) rights-of-ways that contains natural or semi-natural vegetation despite periodic mowing or other management; structures that have been known to support listed species (example: bridges), and 2) surface water or groundwater. Several species inhabit rights-of-ways, and you should carefully consider effects to surface water or groundwater, which often extend outside of a project's immediate footprint.
4. Adequacy of Information & Surveys - Agencies may base their determinations on the best evidence that is available or can be developed during consultation. Agencies must give the benefit of any doubt to the species when there are any inadequacies in the information. Inadequacies may include uncertainty in any step of the analysis. To provide adequate information on which to base a determination, it may be appropriate to conduct surveys to determine whether listed species or their habitats are present in the action area. Please contact our office for more information or see the survey guidelines that the Service has made available in IPaC.

May Effect Determinations for Listed Species

1. If the species habitat is present within the action area and survey data is unavailable or inconclusive: assume the species is present or plan and implement surveys and interpret results in coordination with our office. If assuming species present or surveys for the species are positive continue with the may affect determination process. May affect, with respect to a species, is the appropriate conclusion when a species might be exposed to a consequence of a federal action and could respond to that exposure. For critical habitat,
-

'may affect' is the appropriate conclusion if the action area overlaps with mapped areas of critical habitat and an essential physical or biological feature may be exposed to a consequence of a federal action and could change in response to that exposure.

2. Identify stressors or effects to the species and to the essential physical and biological features of critical habitat that overlaps with the action area. Consider all consequences of the action and assess the potential for each life stage of the species that occurs in the action area to be exposed to the stressors. Deconstruct the action into its component parts to be sure that you do not miss any part of the action that could cause effects to the species or physical and biological features of critical habitat. Stressors that affect species' resources may have consequences even if the species is not present when the project is implemented.
3. If no listed or proposed species will be exposed to stressors caused by the action, a 'no effect' determination may be appropriate – be sure to separately assess effects to critical habitat, if any overlaps with the action area. If you determined that the proposed action or other activities that are caused by the proposed action may affect a species or critical habitat, the next step is to describe the manner in which they will respond or be altered. Specifically, to assess whether the species/critical habitat is "not likely to be adversely affected" or "likely to be adversely affected."
4. Determine how the habitat or the resource will respond to the proposed action (for example, changes in habitat quality, quantity, availability, or distribution), and assess how the species is expected to respond to the effects to its habitat or other resources. Critical habitat analyses focus on how the proposed action will affect the physical and biological features of the critical habitat in the action area. If there will be only beneficial effects or the effects of the action are expected to be insignificant or discountable, conclude "may affect, not likely to adversely affect" and submit your finding and supporting rationale to our office and request concurrence.
5. If you cannot conclude that the effects of the action will be wholly beneficial, insignificant, or discountable, check IPaC for species-specific Section 7 guidance and conservation measures to determine whether there are any measures that may be implemented to avoid or minimize the negative effects. If you modify your proposed action to include conservation measures, assess how inclusion of those measures will likely change the effects of the action. If you cannot conclude that the effects of the action will be wholly beneficial, insignificant, or discountable, contact our office for assistance.
6. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

For additional information on completing Section 7 Consultation including a Glossary of Terms

used in the Section 7 Process, information requirements for completing Section 7, and example letters visit the Midwest Region Section 7 Consultations website at: <https://www.fws.gov/office/midwest-region-headquarters/midwest-section-7-technical-assistance>.

You may find more specific information on completing Section 7 on communication towers and transmission lines on the following websites:

- Incidental Take Beneficial Practices: Power Lines - <https://www.fws.gov/story/incidental-take-beneficial-practices-power-lines>
- Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning. - <https://www.fws.gov/media/recommended-best-practices-communication-tower-design-siting-construction-operation>

Northern Long-eared Bat Update

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 be 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.

Other Trust Resources and Activities

Bald and Golden Eagles

Although no longer protected under the Endangered Species Act, be aware that bald eagles are protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, as are golden eagles. Projects affecting these species may require measures to avoid harming eagles or may require a permit. If your project is near an eagle nest or winter roost area, please contact our office for further coordination. For more information on permits and other eagle information visit our website <https://www.fws.gov/library/collections/bald-and-golden-eagle-management>.

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

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

- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

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

This species list is provided by:

Illinois-Iowa Ecological Services Field Office

Illinois & Iowa Ecological Services Field Office

1511 47th Ave

Moline, IL 61265-7022

(309) 757-5800

PROJECT SUMMARY

Project Code: 2023-0114685

Project Name: USS Man Solar

Project Type: Power Gen - Solar

Project Description: Proposed solar facility

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@41.0643723,-88.74742375853052,14z>



Counties: Livingston County, Illinois

ENDANGERED SPECIES ACT SPECIES

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

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, 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
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane <i>Grus americana</i> Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non- Essential

INSECTS

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

FLOWERING PLANTS

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

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

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

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this

list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bobolink <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

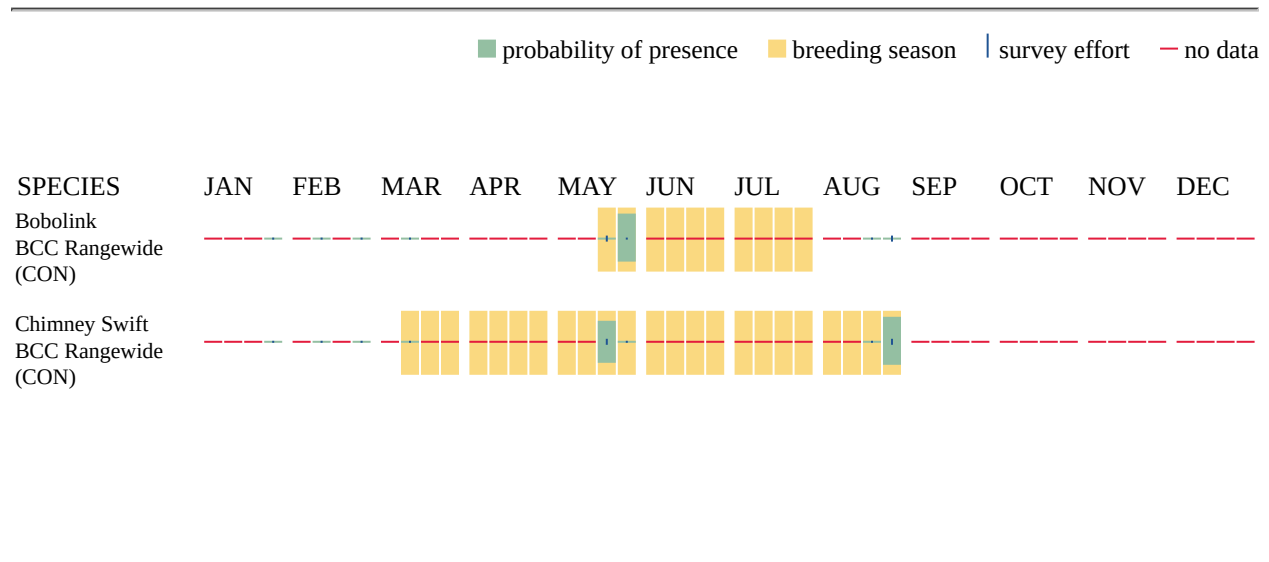
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

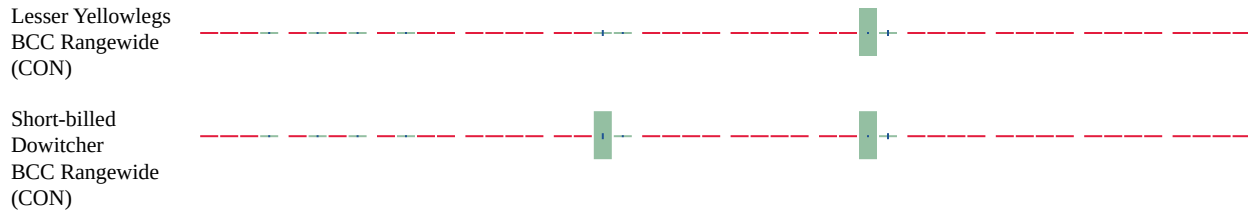
No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

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

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

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

FRESHWATER FORESTED/SHRUB WETLAND

- [PFO1A](#)

RIVERINE

- [R4SBC](#)
-

IPAC USER CONTACT INFORMATION

Agency: Westwood Professional Services
Name: Laura Nussbaum
Address: 10170 Church Ranch Way
Address Line 2: Suite 201
City: Westminster
State: CO
Zip: 80021
Email: laura.nussbaum@westwoodps.com
Phone: 4063902954

**APPENDIX VII – LETTER OF CONSULTATION WITH ILLINOIS STATE
HISTORIC PRESERVATION OFFICE**

August 24, 2023

Illinois Department of Natural Resources
State Historic Preservation Office
One Natural Resources Way
Springfield, IL 62702

Re: USS Man Solar Project, Livingston County, IL
File: R0037687.00

To Whom It May Concern:

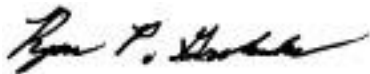
On behalf of USS Man Solar LLC (Applicant), Westwood Professional Services is writing to request comments regarding the proposed USS Man Solar Project located in Livingston County, Illinois (**Exhibits 1 & 2**). This Project will be an approximate 2.0 MWac solar facility located within an approximate 57-acre Subject Parcel consisting of currently undeveloped, agricultural land in Section 15 of Township 30N, Range 4E.

As part of the preparation of a SWPPP in accordance with the General NPDES Permit No. ILR10, planned for 2024, the Applicant is required to consult with the Historic Preservation Agency. This consultation is to ensure compliance with Illinois State law regarding historic preservation. This Project has no known federal nexus as this time. Only minor surface grading is planned for the Project which will comply with state required stormwater management controls.

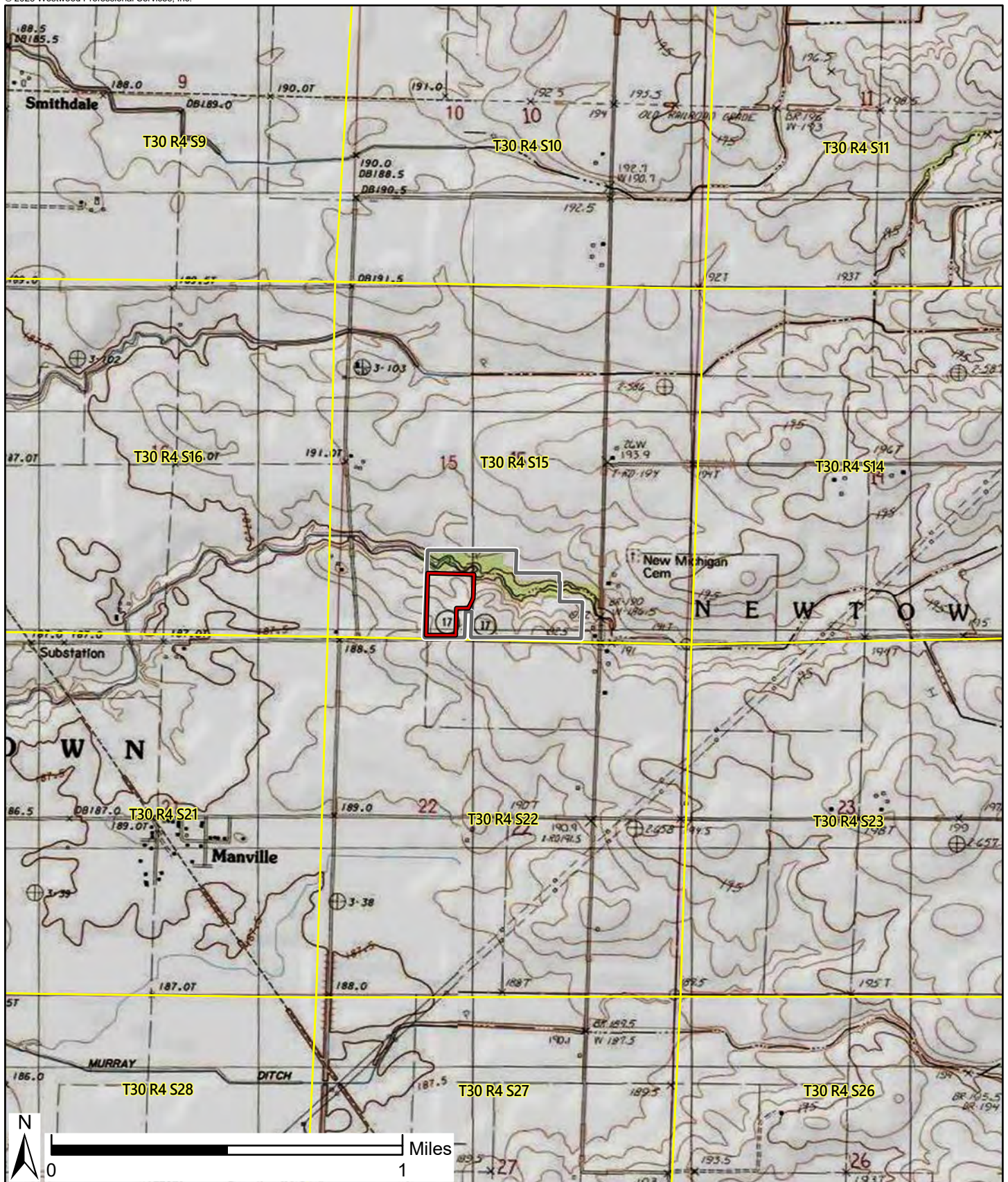
We would appreciate hearing any comments you may have regarding the solar project. If you have questions, I can be reached at (612) 209-3352 or via email at ryan.grohnke@westwoodps.com.

Sincerely,

WESTWOOD PROFESSIONAL SERVICES



Ryan P. Grohnke
Cultural Resources Manager



Scale: 1:24,000

Data Source(s): Westwood (2023);
USA Topo Maps: Copyright ©
2013 National Geographic Society,
i-cubed
World Street Map: Esri, HERE,
Garmin, FAO, NOAA, USGS, EPA.

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



- Project Premises
- Subject Parcel
- PLS Section

USS Man Solar LLC Project

Livingston County, Illinois

Project Location
EXHIBIT 1



Scale: 1:8,000

Data Source(s): Westwood (2023);
Hybrid Reference Layer: Esri
Community Maps Contributors, ©
OpenStreetMap, Microsoft, Esri,
HERE, Garmin, SafeGraph,
GeoTechnologies, Inc., METI/
NASA, USGS, EPA, NPS, US
Census Bureau, USDA
NAIP Imagery: Source: Esri,

Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



- PLS Section
- Project Premises
- Subject Parcel

USS Man Solar LLC Project

Livingston County, Illinois

Project Area
EXHIBIT 2

APPENDIX VIII – TYPICAL MANUFACTURER SPECIFICATIONS



THREE PHASE PADMOUNT TRANSFORMERS

Short for "Tamper-proof, compartmentalized, liquid-filled, pad mounted transformer", all padmount designs feature fully enclosed tamper-proof terminal compartments and can be supplied with dead-front or live-front configuration, for loop or radial feed applications, with Type II mineral oil, or environmentally friendly and high flash-point Envirotemp™ FR3™.

All new Maddox padmount transformers are constructed of the highest quality materials and built in the US to heavy duty industrial standards, making them ideal for commercial and industrial applications such as data centers, solar step-up, manufacturing facilities, shopping centers, etc. Our padmounts are designed to the latest department of energy efficiency standards built and tested in accordance with industry standards including NEMA, ANSI C.57, DOE, and IEEE as applicable.

With thousands of new units in stock and ready-to-ship, and the manufacturing ability to produce almost any custom design, Maddox stands ready to meet your transformer need(s). Maddox stocks all standard configurations to match most common applications and deliver on short notice.

Design

HV Bushing Config.:

- Dead front or live front
- Loop feed or radial feed

Fluid Options:

- Type II Mineral Oil
- Envirotemp™ FR3™

Standard Gauge/Accessory Package:

- Pressure relief valve
- Pressure vacuum gauge
- Liquid temp & level gauges
- Drain & sample valve
- Adjustment taps

Switch Options:

- 2 Position LBOR Switch
- 4 Position LBOR Switch (V-blade or T-blade)
- (3) 2 Position LBOR Switches

Fusing Options:

- Bayonets w/ isolation links or CLFs

Construction:

- 5-legged core
- Rectangular wound copper or aluminum windings
- Carbon reinforced or stainless steel tank
- Steel divider between HV and LV cabinets
- Penta-head captive bolt

Optional Design Features & Accessories:

- Gauges w/ Contacts
- External drain and sample valve
- Electrostatic Shielding
- Step-up Design
- Surge-Arresters

Available Ratings

Table 1. Typical Transformer Ratings

Sizes (kVA)	45, 75, 112.5, 150, 225, 300, 500, 750, 1000, 1500, 2000, 2500, 3000, 3750, 5000
Frequency	60 Hz or 50 Hz
Cooling Class	ONAN or KNAN
Temp Rise	55°C, 65°C, 55/65°C, 75°C
Voltages	Available in Δ or Y configuration
600V	208
	240
	416
	480
	600
2.5kv – 5kv	2400
	4160
	4800
15kV	12000
	12470
	13200
	13800
	14400
25kV	20780
	21600
	22900
	24940
	26400
35kV	33000
	34500

Fig 1. Padmount Transformer Outline

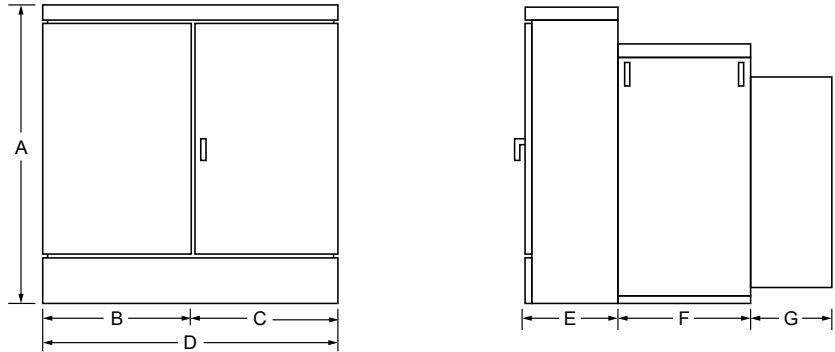




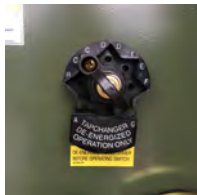
Table 2. Approximate Transformer Dimensions

kVA	A	B	C	D	E	F	G	Gallons	Weight (Lbs)
300	59"	29.5"	22"	51.5"	20.5"	24"	10"	196	4,056
500	59"	33"	26.5"	59.5"	24"	26.5"	10"	210	5,023
750	73"	36"	29"	65"	24"	26.5"	10"	358	7,664
1000	73"	36"	29"	65"	24"	27"	10"	354	8,530
1500	73"	36"	35.5"	71.5	24"	33.5"	10"	410	10,782
2000	75"	39.5"	28"	67.5	24"	35"	27"	433	12,490
2500	78"	39.5"	35.5"	75.5"	24"	37.5"	22.5"	545	14,246
3000	84"	30.5"	32"	62.5"	24"	37.5"	38"	550	14,014
3750	75"	50.5"	30"	80.5"	25.5"	42"	38"	730	17,785

Fig 2. Three Phase Maddox Padmount Transformer






Table 3. Common Accessories

1. Bayonet Fuses

2. Loadbreak Switch

3. Tap-changer

4. Bushings

5. Parking Stand

6: Gauges

Solis-(125-255)K-EHV-5G-US

Solis Three Phase US Inverters



Model:

600V: Solis-125K-EHV-5G-US-PLUS Solis-185K-EHV-5G-US Solis-185K-EHV-5G-US-PLUS

800V: Solis-255K-EHV-5G-US Solis-255K-EHV-5G-US-PLUS



Efficient

- ▶ 9/12/14 MPPTs, max. efficiency 99.0% (CEC efficiency 98.3%)
- ▶ > 150% DC/AC ratio
- ▶ High power tracking density 60MPPT/MW
- ▶ Compatible with 500W+ bifacial modules



Safe

- ▶ IP66
- ▶ CA Rule 21 compliant and UL 1741 SA Certified
- ▶ Built-in PID recovery for better module performance
- ▶ Fuse free design, safe and maintenance free
- ▶ Globally recognised branded component for longer life



Smart

- ▶ Intelligent string monitoring, smart I-V curve scan
- ▶ Remote firmware upgrade with simple operation



Economic

- ▶ Power line communication (PLC) (optional)
- ▶ DC side supports "Y" connector
- ▶ Support aluminium wire to reduce cost
- ▶ Reserve DC energy storage access

Datasheet

Model Name	Solis-125K-EHV-5G-US-PLUS	Solis-185K-EHV-5G-US	Solis-185K-EHV-5G-US-PLUS	Solis-255K-EHV-5G-US	Solis-255K-EHV-5G-US-PLUS
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Input DC

Max. input voltage	1500 V				
Rated voltage	950 V			1080 V	
Start-up voltage	500 V				
MPPT voltage range	480-1500 V				
Max. input current	9*30 A	14*26 A	12*30 A	14*26 A	12*30 A
Max. short circuit current	9*50 A	14*40 A	12*50 A	14*40 A	12*50 A
MPPT number/Max. input strings number	9/18	14/28	12/24	14/28	12/24

Output AC

Rated output power	125 kW	185 kW	255 kW
Max. apparent output power	137.5 kVA	185 kVA	255 kVA
Max. output power	137.5 kW	185 kW	255 kW
Rated grid voltage	3Φ/PE, 600 V		3Φ/PE, 800 V
Rated grid frequency	60 Hz		
Max. output current	132.3 A	178.0 A	184.0 A
Power Factor	>0.99 (0.8 leading - 0.8 lagging)		
THDi	<3%		

Efficiency

Max. efficiency	99.0%
CEC efficiency	98.3%

Protection

DC reverse-polarity protection	Yes
Ground fault monitoring	Yes
Anti-islanding protection	Yes
Strings monitoring	Yes
Integrated AFCI (DC arc-fault circuit protection)	Yes
I/V Curve scanning	Yes
Integrated PID recovery	Yes

General Data

Dimensions (W*H*D)	46.1*30.3*15.1 in (1170*770*384 mm)	
Weight	240 lbs (109 kg)	249.0 lbs (113 kgs)
Topology	Transformerless	
Self consumption (night)	<2 W	
Relative humidity	0-100%	
Ambient operating temperature range	-13°F to 140°F (-25°C ~ +60°C)	
Storage environment	-40°F to 176°F (-40°C to 80°C)	
Ingress protection	TYPE 4X	
Cooling concept	Intelligent redundant fan-cooling	
Max. operation altitude	13,120 ft (4000 m)	
Compliance	UL 1741, UL 1741SA, UL 1998, UL1699B, IEEE 1547, FCC Part 15 (Class A & B), CAN/CSA C22.2 107.1-1, California Rule 21 Phaes II & III	

Features

DC connection	MC4 connector
AC connection	OT terminal (max. 300 mm ²)
Display	LCD
Communication	RS485, Optional: PLC

APPENDIX IX – NATURAL RESOURCES INFORMATION REPORT

Natural Resource Information Report

Compiled by

The Livingston County Soil and Water Conservation District

Project Information

Natural Resource Information File Number	#015
Date the SWCD Board Reviews Report	July 11, 2022
Name of Petitioner	US Solar c/o Luke Gildemeister
Size of Parcel	25.23 ac.
Current Zoning	Agriculture
Proposed Zoning	Special Use – Solar
Parcel Number(s)	02-02-15-300-008
Contact Person	Michelle Proska

Copies of this report and notification of the proposed land use changes were provided to:	Yes	No
The Petitioner	X	
The Petitioners Legal Representation		X
Livingston County Zoning Board of Appeals	X	
Livingston County SWCD District Files	X	
Report Prepared By: Rebecca Taylor Position: Resource Conservationist		

Purpose and Intent of This Report

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:

Livingston County Soil and Water Conservation District
1510 W. Reynolds St.
Pontiac, IL 61764
Phone: 815-844-6127, ext. 3
E-mail: rebecca.m.taylor@il.nacdnet.net

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Executive Summary

Natural Resource Information File Number	#015
Petitioners Name	US Solar c/o Luke Gildemeister
Contact Person	Michella Proska
Unit of Government Responsible for Land Use Change	Livingston County Zoning Board of Appeals
Location of Parcel	Section 15, Newtown Township
Property Address, PIN Number	02-02-15-300-008
Existing Land Use	Agriculture
Surrounding Land Use	Agriculture
Proposed Land Use	Special Use – Solar
Proposed Water Supply	N/A
Proposed Wastewater Treatment	N/A

Highlights of the Natural Resource Concerns

Land Evaluation and Site Assessment (LESA): LE 75 + SA 138 = 213. This is a high impact to agriculture.

Prime Farmland: Prime Farmland soils are an important resource for Livingston County. Each soil type is assigned a rating, which is then used to determine the LESA score for the site. The soils on this site are either prime farmland or prime farmland if drained. A complete description of the farmland classification for this site is in the **Custom Soil Resource Report** for this project starting on page 38.

Sediment and Erosion Control: Development of this site should include a sedimentation and erosion control plan which is required by the Illinois EPA. The Livingston County Soil and Water Conservation District recommends the use of NRCS guidelines and the Illinois Urban Manual in selecting the proper Best Management Practices for the development site. Vegetation should also be established as soon as possible to minimize erosion.

Aquifer Sensitivity: According to the Illinois State Geological Survey, there is no aquifer material within 50 feet of the surface located on this site. The potential for aquifer contamination would be slight to none.

Wetlands: The Natural Resources Conservation Service's wetland inventory *does not identify* wetland areas on the site. However, there is a possible wetland identified just north of the proposed site in the wooded area. A wetland delineation should be completed by a certified delineations specialist to determine if there are any, so they can be protected during development.

Floodplain: There are **no** floodplain areas identified on this site.

Hydric Soils: Hydric soils are defined by the National Technical Committee for Hydric Soils as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil. This site does have some hydric soils or soils that have hydric components included in them. Please refer to page 31 of the **Custom Soil Resource Report** for specific information.

Ponding/Flooding Frequency: Milford silty clay loam and Bryce silty clay, which cover about 4.5% of the site are poorly drained soils that will frequently pond. The rating of "frequent" means that ponding occurs, on the average, more than once in two years. The chance of ponding is more than 50% in any year. This information can be found starting on page 48 of the **Custom Soil Resource Report**. Planners need to take this into consideration as they develop this site.

Conservation Concepts for Development

- Encourage Common Open Space: (a common area without property lines and managed by professionals contracted by a homeowners association). Common areas may also protect rivers, lakes, streams, wetlands, wildlife, and water quality.
- Surface Ground Water Quality: Minimize impacts of runoff by using best management practices (BMPs) such as: buffers, vegetative swales (instead of curb and gutter), constructed wetlands and wetland bottom detention to improve the quality of runoff, and protect environmentally sensitive areas (wetlands, rivers, and streams).
- Groundwater Quantity: reducing impervious areas in groundwater recharge soils maximizes infiltration.
- Maintain existing vegetation throughout the development process: BMPs such as eliminating mass grading, protecting existing trees, wooded fence rows and odd areas, vegetated hillsides and wetlands.
- Permanently stabilize all cropland going to development: BMPs such as permanent or temporary vegetative cover. Using perennial grasses and legumes would provide a filter for erosion, wildlife habitat during development, and stabilize the highly erodible land from the erosive forces of rainfall.
- Permanently stabilize all stormwater and drainage: conveyance easements prior to their use.
- Plan for the establishment of native vegetation in all common areas, drainage areas and conservation areas: Utilize native vegetation that improves biological diversity for water quality and wildlife habitat, and prohibits the use of fertilizers, pesticides and mowing.
- Minimize disturbance of sensitive highly erodible soils: to preserve the hydrologic condition of the soil profile for improving permeability and infiltration that promotes groundwater recharge.
- Restore existing vegetation: to improve wildlife habitat, stormwater runoff, and water quality.
- Maintenance: Maintain all land for long-term benefits.
- Use buffers: for esthetics, water quality and natural resource protection.
- Eliminate stormwater detention drainage into agricultural drain tile.
- Erosion and Sediment Control Plan: highly erodible soils require a well-planned and implemented erosion and sediment control plan utilizing the above referenced BMPs.

Livingston County SWCD Land Use Opinion

Land Use Opinion: The Livingston County Soil and Water Conservation District (SWCD) has reviewed the natural resource information for a proposed solar energy farm on IL Route 17. This site is located in Section 15 of Newtown Township.

The Livingston County SWCD has always been an advocate for preserving Prime Farmland whenever feasible. This site does contain Prime Farmland soils based on the soil survey. Once these soils have been disturbed, it may be difficult to bring them back to the productive level they currently have.

A Land Evaluation and Site Assessment (LESA) was conducted for this site. The land evaluation score indicates that these soils are considered to be somewhat productive. The site assessment portion of this evaluation looks at items such as roads and infrastructure, and the degree to which the affected local government can bear the additional costs the development may generate. A summary of the LESA score information indicates that this site's location has a high impact on agriculture from the proposed development.

A soil erosion and sediment control plan needs to be in place. Sediment leaving the area can damage streams, ponds, and wetlands. Best Management Practices will need to be in place to protect the site and surrounding areas from erosion and sedimentation. Also, as part of this, the developer will need to make sure that vegetation is established as soon as possible and that weeds are not allowed to take over the property.

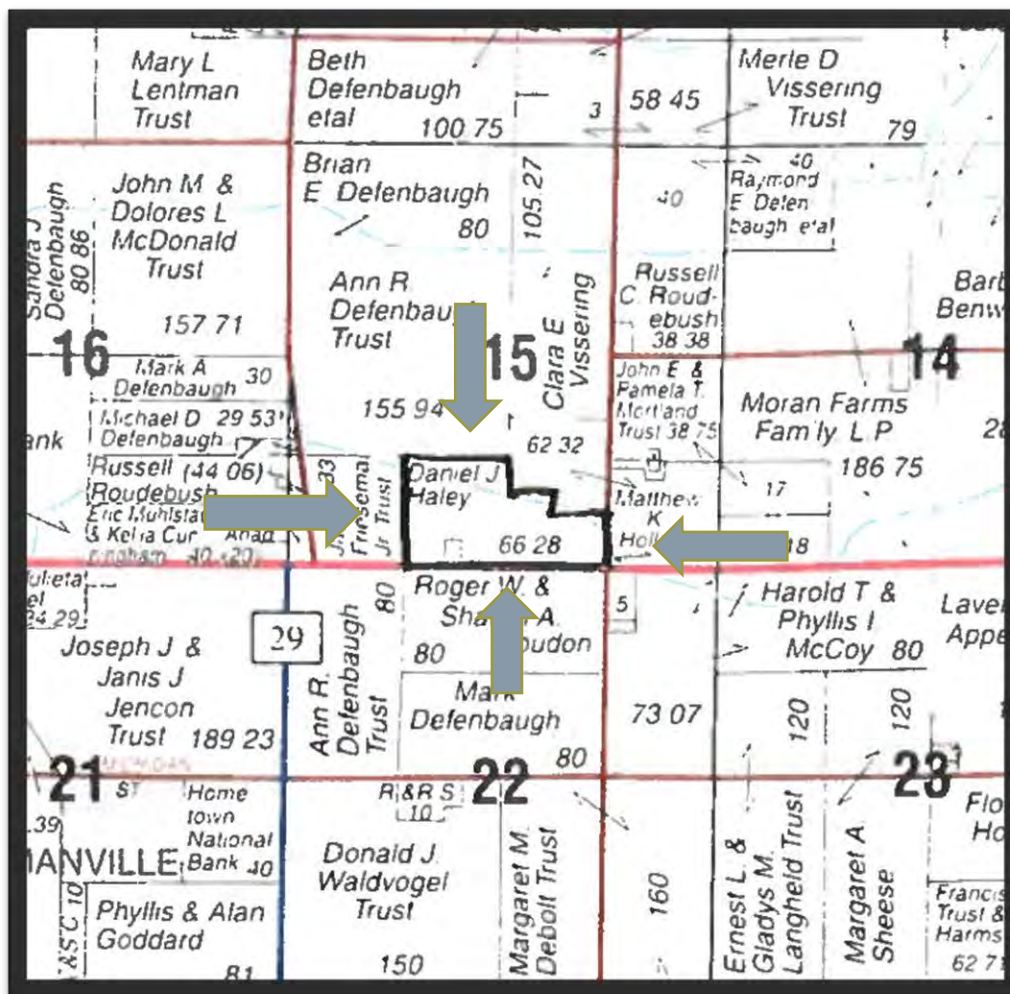
The Livingston County SWCD would recommend a sub-surface drainage tile investigation be completed before this site is disturbed. If drainage tile is damaged during the implementation of this project, it should be repaired according to the included specifications. The damage to drainage tile on this site could have an adverse effect on neighboring properties.

The Livingston County SWCD would like for the developer to have a comprehensive decommissioning plan in place to ensure that this property could again be productive after the project has ended. Finally, all buried utility lines need to be identified and avoided.

The information that is included in this Natural Resource Information Report is to assure the Land Developers take into full consideration the limitation of the land that they wish to develop. Guidelines and recommendations are also a part of this report and should be considered in the planning process. The Natural Resource Information Report is required by the Illinois Soil and Water Conservation District Act (Ill Compiled Statutes, Ch. 70 Par 405/22.02a).

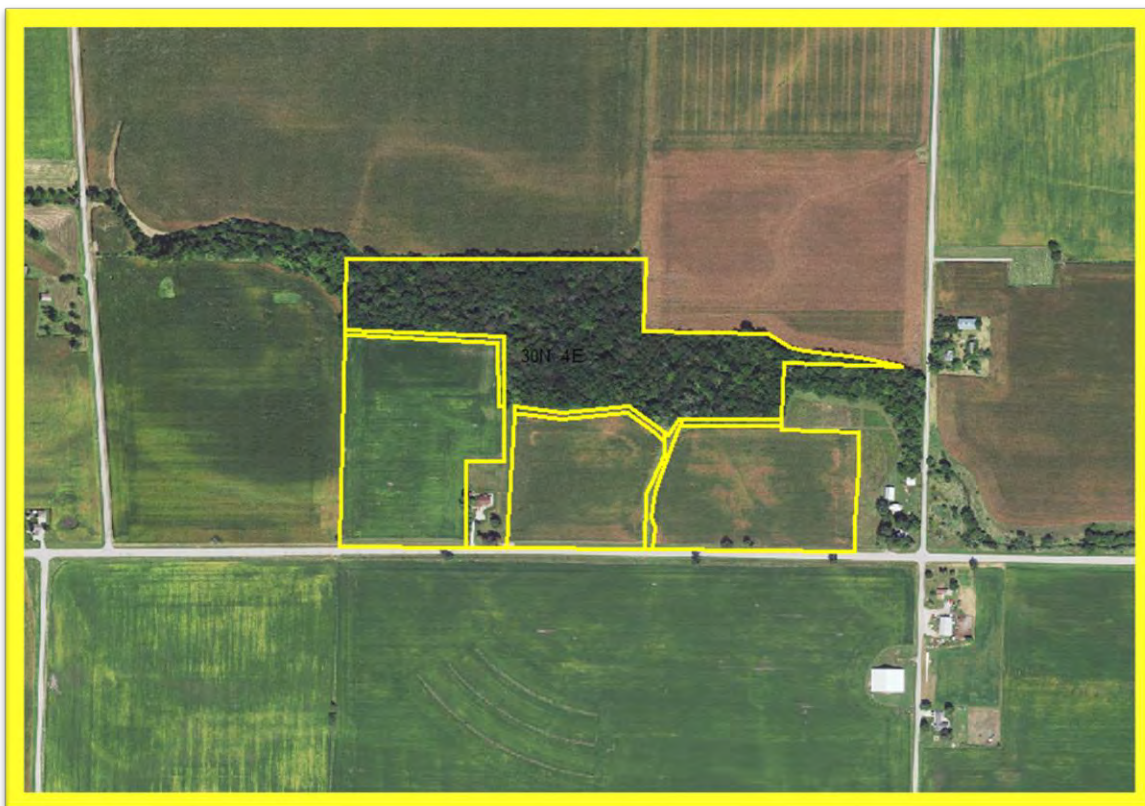
Lee Bunting
SWCD Chairman

Parcel Location



Reproduced from Rockford Map Publishers, Inc.

Legal Description of Property: The Southeast Quarter of the Southwest Quarter; and the South fifteen acres of the West half of the Southwest Quarter of the Southeast Quarter all in Section 15, Township 30 North, Range 4 East of the Third Principal Meridian in Livingston County, IL.



Site Description: This site is located in Section 15 of Newtown Township in Livingston County, Illinois. The site lies North of Route 17. The North side of the site is bordered by woods. The East, West and South sides of the site are bordered by agricultural land.

Soils Information



Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
69A	Milford silty clay loam, 0-2% slopes	1.3	2.1%
91A	Swygert silty clay loam, 0-2% slopes	8.9	14.7%
91B2	Swygert silty clay loam, 2-4% slopes, eroded	25.9	42.8%
235A	Bryce silty clay, 0-2% slopes	1.4	2.2%
244A	Hartsburg silty clay loam, 0-2% slopes	1.2	2.0%
448B2	Mona silt loam, 2-5% slopes, eroded	0.2	0.3%
715A	Arrowsmith silt loam, 0-2% slopes	4.0	6.5%
3451A	Lawson silt loam, 0-2% slopes, frequently flooded, brief duration	17.7	29.3%
Total Area of Interest		60.5	100.0%

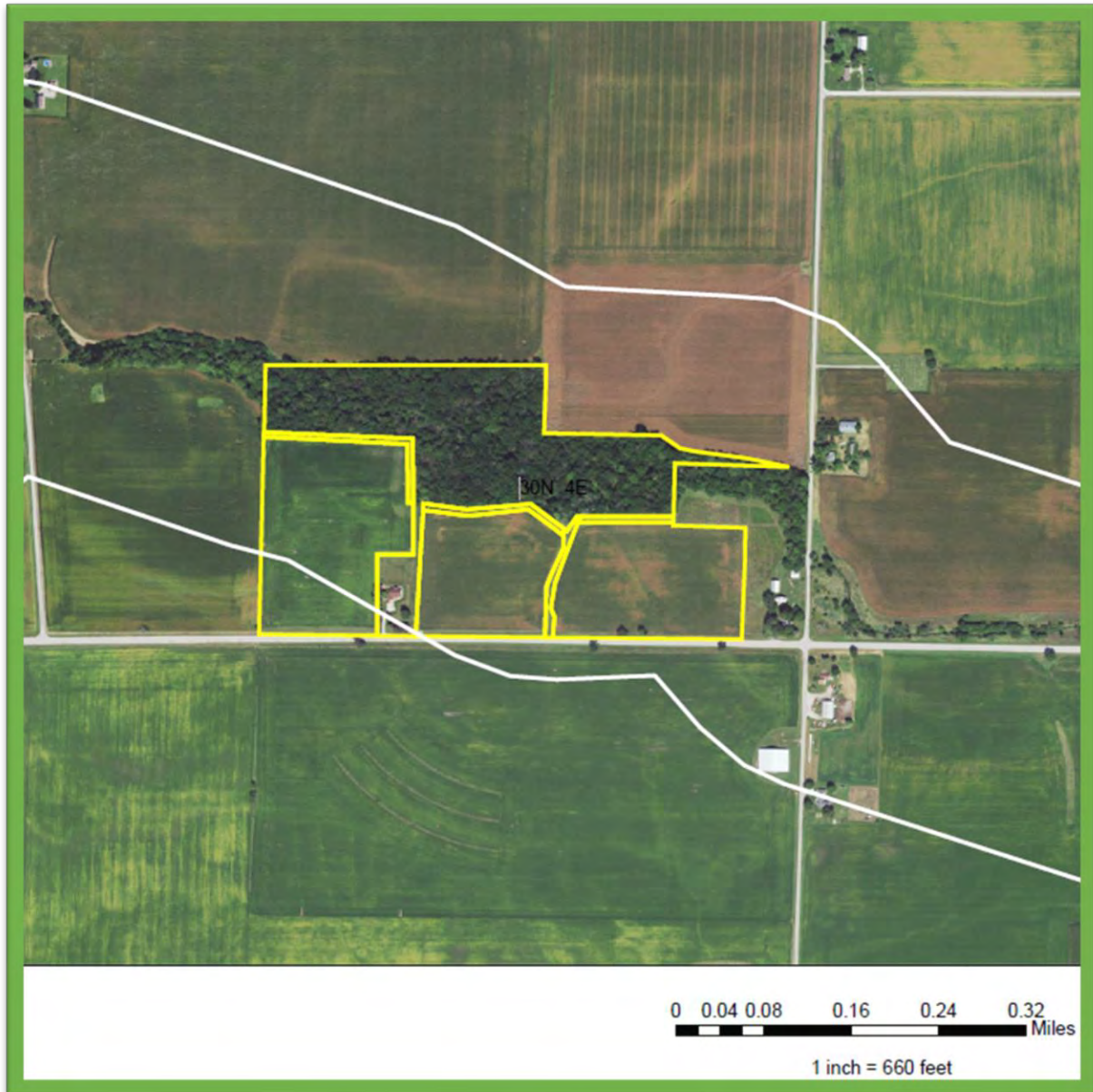
Archaeologic/Cultural Resources

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

Landowners with historical properties on their land have ownership of that historical property. However, the State of Illinois owns all of the following: human remains, grave markers, burial mounds, and artifacts associated with graves and human remains.

Non-grave artifacts from archaeological sites and historical buildings are the property of the landowner. The landowner may choose to disturb a historical property, but may not receive federal or state assistance to do so. If an earth moving activity disturbs human remains, the landowner must contact the county coroner within 48 hours.





Office maps indicate the possibility of historical properties in the vicinity of the Parcel in Question (PIQ) but a formal review has not been done. The Livingston County SWCD has not notified the Illinois Historic Preservation Agency of the proposed land use change. The applicant will need to contact IHPA to have a formal review done.

Ecologically Sensitive Areas

What is biological diversity and why should it be conserved?

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 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 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 in the general vicinity 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 that there are no ecologically sensitive areas in the general vicinity of the Parcel in Question (PIQ).

Geologic/Aquifer Information

Geology and the Proposed Land Use

Local geology plays an important role in determining the pollution potential. Groundwater pollution potential 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 potential for aquifer contamination is low near the parcel in question. This site is located in an area with no continuous aquifer material within 50 feet of ground surface.

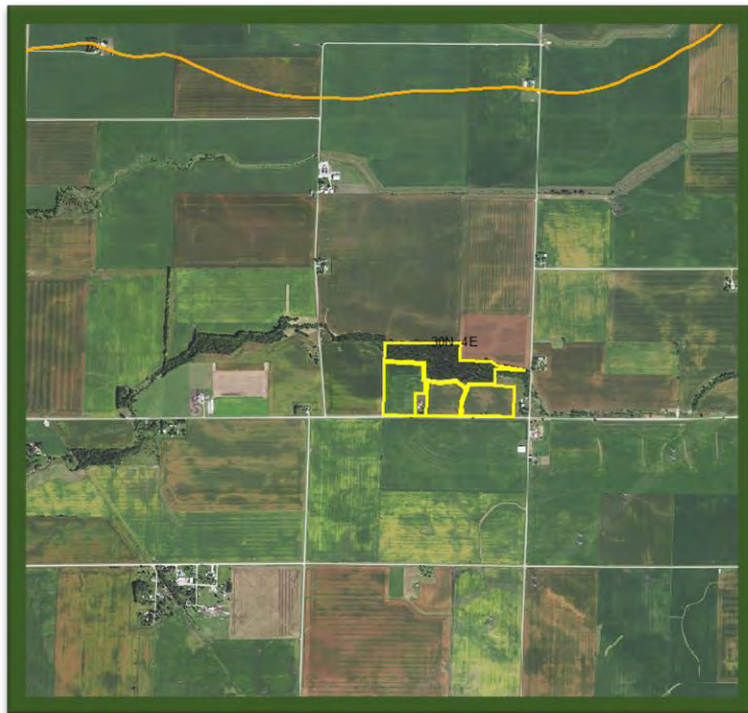


Watershed Information

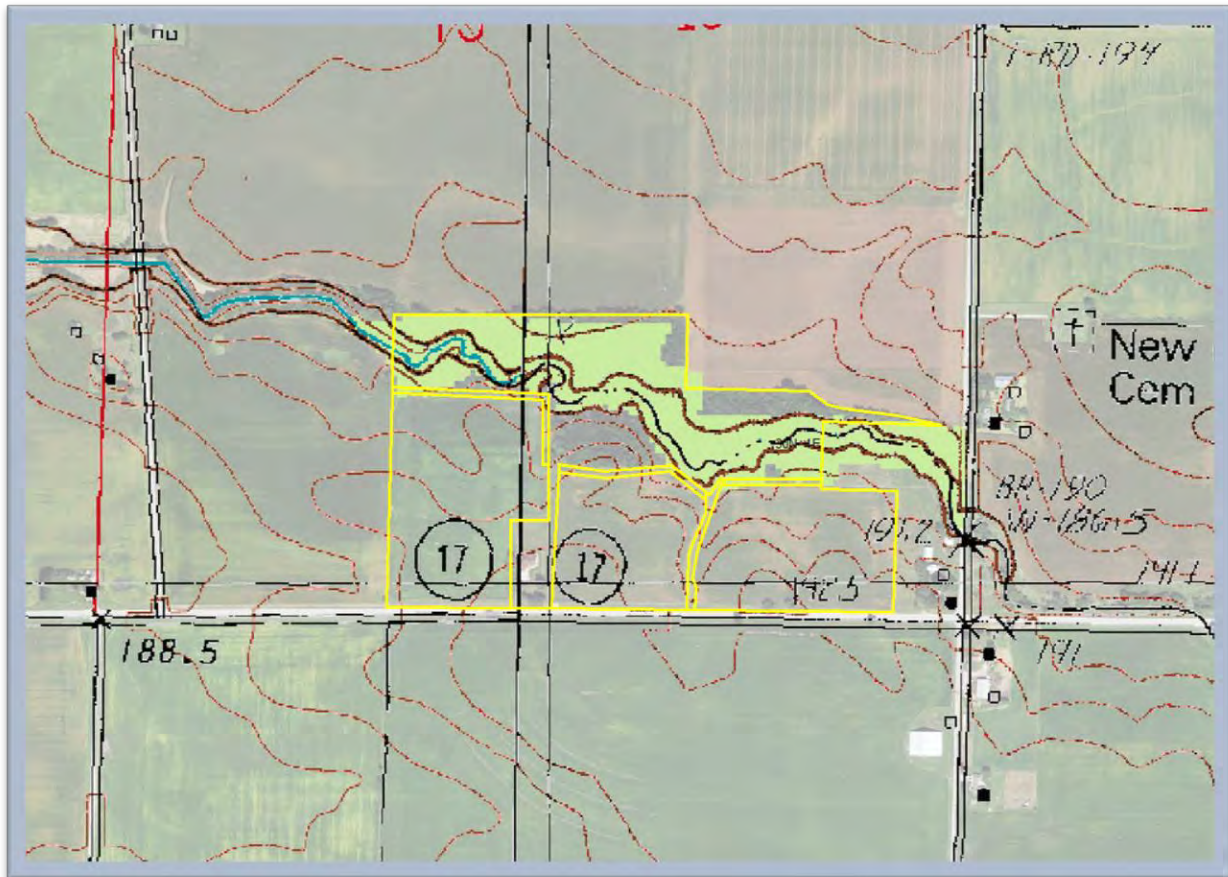
Watershed and Subwatershed Information

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

In 2006, a watershed based plan was developed for this watershed with the Illinois Department of Natural Resources. It is recommended that developments incorporate the Best Management Practices identified in this plan to protect and enhance overall surface and groundwater quality, reduce existing flood damage, prevent flooding from worsening, improve aquatic and wildlife habitat, along with developing open space and recreational opportunities. More information can be found about the watershed plan and Best Management Practices by visiting the Livingston County Soil and Water Conservation District.



Topographic/FEMA Information



This site ranges from approximately 632 feet on the south side to approximately 624 feet on the north side as you near the wooded area and creek.

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 downstream 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 of 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 of the size and density of parcels in that area. (This is to correctly determine that 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. Livingston County uses both of these maps in conjunction with each other for flooded area determinations. The Flood of Record maps show the areas of flood for various years. Both of these maps stress that the recurrence of flooding is merely statistical. That is to say a 100-year flood may occur twice in one year, or twice in one week, for that matter.

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

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

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

Another indication of flooding potential can be found in the soils information. Hydric soils indicate the presence of drainageways, areas subject to ponding, or 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 the development occurs, thus raising the concerns of the loss of water storage in these soils and the potential for increased flooding in the area.

National Flood Hazard Layer FIRMette



Legend

SEE FIRM REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The baseline shown complies with FEMA's baseline accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was updated on 7/15/2020 to 1:10 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the user or viewer of the following map elements does not appear: baseline imagery, flood zone labels, legend, scale bar, map product date, community identifier, FIRM panel number, and FIRM effective date. Map images for unmapped and infrastructure areas should be used for regulatory purposes.

Scale: 1:6,000
Base map: USGS National Map, Orthoimagery, Data refreshed October, 2020

Soil Erosion and 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 sediment 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 of temporary or permanent groundcover,
- Retaining sediment on site, and
- Properly installing, inspecting and maintaining control measures.

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

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

Map Unit Symbol	Slope	Rating	Acres	Percent
69A	0-2%	Moderate	1.3	2.1%
91A	0-2%	Moderate	8.9	14.7%
91B2	2-4%	Moderate	25.9	42.8%
235A	0-2%	Slight	1.4	2.2%
244A	0-2%	Moderate	1.2	2.0%
448B2	2-5%	Moderate	0.2	0.3%
715A	0-2%	Moderate	4.0	6.5%
3451A	0-2%	Moderate	17.7	29.3%
Total Severe			0	0

Wetland Information

Importance of Wetland Information

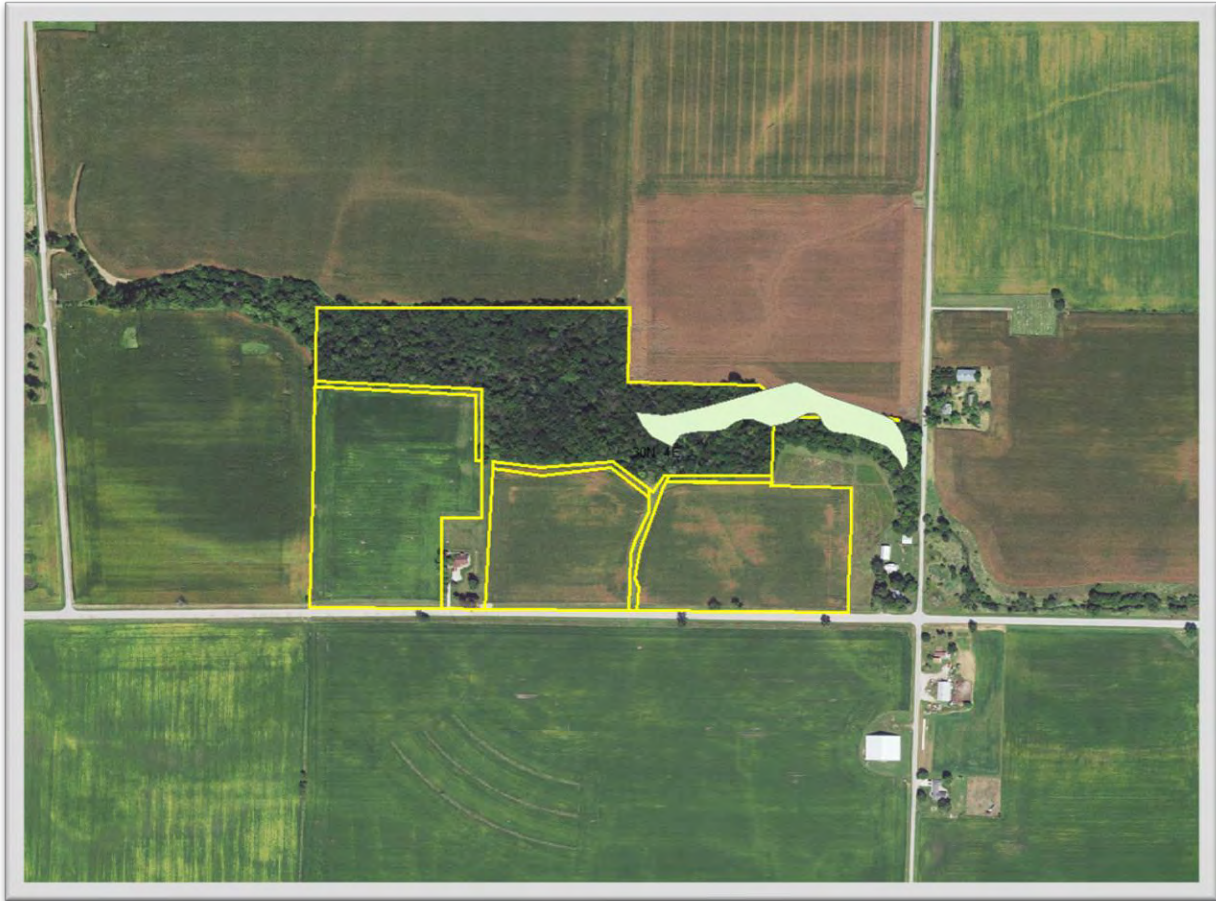
Wetlands function in many ways to provide numerous benefits to society. They control flooding by offering a slow release of excess water downstream or through the soil. They cleanse water by filtering out sediment and some pollutants, and can function as rechargers of our valuable groundwater. They also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

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

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

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

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



There is a possible wetland on the tract but not in the proposed project area.

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 or Federal regulatory jurisdiction should apply for agency approvals.

REGULATORY AGENCIES

- **Wetlands or U.S. Waters: U.S. Army Corps of Engineers**, Rock Island District, Clock Tower Building, P.O. Box 2004, Rock Island, IL 61204-2004. Phone (309) 794-5379.
- **Flood plains: Illinois Department of Natural Resources\Office of Water Resources**, Natural Resources Way, Springfield, IL 62702-1270.
- **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.

Woodlands

The PIQ does contain mature woods on the North side of the project area. These mature weeds should be preserved as much as possible.

Native woodlands are no longer a common occurrence throughout much of Livingston 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 improvement, and aesthetic values. Forests are responsible for much of the biological diversity in the state. Many species are dependent upon forests for food and shelter, including threatened and 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 include 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 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 should be replaced by younger specimens of native trees now found on the PIQ.

Land Evaluation Site Assessment

The Livingston County Land Evaluation and Site Assessment System (LESA) is designed to evaluate the viability of a site for agricultural uses. Although the framework of the system was developed by the Natural Resources Conservation Service of the U.S. Department of Agriculture, the contents of the county's LESA System were prepared locally to utilize soil survey information and interpretations and to incorporate local values and objectives regarding the protection of agricultural land use and the coordination of growth, affecting land development.

The System consists of two parts, the Land Evaluation and the Site Assessment, with a maximum of 300 points. The Land Evaluation has a maximum of 100 points and is used to rate farmland for its agricultural productivity and its prime farmland category. The data for formulating the land evaluation is derived from the soil survey of Livingston County. Generally, the Land Evaluation arranges the County's soils by their relative values, represented by a score of 0 to 100, with 0 being the worst for agriculture and 100 the best. The Site Assessment considers important factors other than soils relative to a specific parcel, which determine viability for agricultural use. The maximum number of points for the Site Assessment is 200. If a parcel were to receive a total of 201 points or more for the completed evaluation, that would indicate that the site has a high rating for agriculture. In utilizing the LESA System, the higher the point value, the greater the productivity and the more viable the site for agricultural use.

The Livingston County LESA System is a valuable tool to guide land use decisions for the County. It does not take away the power of local officials to make land use decisions; rather, it assists them in making rational, consistent, and supportable land use decisions. Applications of the LESA System will generally fall under two types of requests involving conversion of land from agricultural use to non-agricultural use. The most frequent application of LESA will be when a request is made to rezone a tract of land from the County's agricultural districts to another zoning district, district, districts, or for special uses. The LESA System can also be used to review state and federal projects for compliance with the Illinois Farmland Preservation Act and the Federal Farmland Protection Policy Act and their impact on important farmland.

Livingston County Land Evaluation and Site Assessment System
Land Evaluation Worksheet

Project: US Man Solar
 Site Location Twp/Sec: Section 15 Newtown Township
 Date Evaluation Completed: 7/5/2022
 Reviewer/Reviewers: Rebecca Taylor

Soil	AG Group	Relative Value	Acres	Product (Relative Value X Acres)
69A	2	87	1.3	113.1
91A	4	74	8.9	658.6
91B2	4	69	25.9	1787.1
235A	4	77	1.4	107.8
244A	2	93	1.2	111.6
448B2	4	70	0.2	14
715A	1	96	4	384
3451A	5	77	17.7	1362.9
Total			60.6	4539.1

Land Evaluation = Total Product/Total Acres

Land Evaluation = 74.90264026

Land Evaluation Subtotal

75

Comments:

Specific Limitations:

LESA SUMMARY SHEET
Livingston County's Point System for Land Evaluation Site Assessment

Livingston County, IL	Max Points per Factor	Total	Comments
1. Percent of Area within one and one half mile radius...compatible to Agriculture	17	17	
2. Land in agriculture adjacent to site	13	13	
3. Percentage of site in agriculture	13	13	
4. Size of site	6	2	
5. Agricultural support system	6	6	
6. Impact of proposed conversion on retention of other farmland and agricultural infrastructure	8	4	
7. Compatibility with County Zoning Ordinance	20	20	
8. Soil limitation of site for proposed use	15	12	
9. Number of undeveloped and suitable alternative sites within one and one half mile radius of site	11	11	
10. Impact of flooding/drainage	10	5	
11. Impact of proposed use on known/present unique historic/cultural and ecological features	5	0	
12. Is the site compatible with County comprehensive development plan	15	0	
13. Distance from city/village/corporate limits	13	13	
14. Availability of central sewer/water supply	11	11	
15. Transportation accessibility	10	6	
16. Environmental impact of proposed use	10	0	
17. Soil suitable for on-site waste water disposal	11	0	Site will not have a septic or other waste water disposal
18. Distance from fire protection service	6	5	
SITE ASSESSMENT TOTAL	200	138	
LAND EVALUATION TOTAL	100	75	
TOTAL POINTS	300	213	

201-300 High Impact to Agriculture

185-201 Medium Impact to Agriculture

0-185 Low Impact to Agriculture

Glossary

AGRICULTURAL PROTECTION AREAS (AG AREAS): Allowed by P.S. 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 cannot 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, fruits and vegetables, and animals 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-round 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 reactions and near optimum levels of available nitrogen, phosphorous, 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 uses 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.

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

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

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

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

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

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

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

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

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

References

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

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FIRM – Flood Insurance Rate Maps for Livingston County. Prepared by FEMA – Federal Emergency Management Agency.

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

Soil Survey of Livingston County. United States Department of Agriculture, Natural Resources Conservation Service.

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

Land Evaluation and Site Assessment System. The Livingston County Soil and Water Conservation District and the Livingston County Zoning Board of Appeals. In cooperation with: USDA, Natural Resources Conservation District.

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

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 1984.

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

Geologic Road Map of Illinois. Department of Natural Resources, Illinois State Geological Survey, Natural Resources Building, 615 East Peabody, Champaign, IL 61820-6964.

Appendix A: Solar and Electric Transmission Line AIMA

STANDARD AGRICULTURAL IMPACT MITIGATION AGREEMENT
between

and the
ILLINOIS DEPARTMENT OF AGRICULTURE
Pertaining to the Construction of a Commercial Solar Energy Facility
in
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).

, hereafter referred to as Commercial Solar Energy Facility Owner, or simply as Facility Owner, plans to develop and/or operate a enter size MW Commercial Solar Energy Facility in County [GPS Coordinates: ,], which will consist of up to 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 are subject to modification through negotiation by Landowners and the Facility Owner, provided such changes are negotiated in advance of any 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 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.
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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)	<p>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.</p> <p>“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.</p>
Commercial Solar Energy Facility Owner (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 deemed 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	<p>A plan prepared at the Facility Owner's expense by a Professional Engineer who is agreed upon by the County and the Facility Owner, that includes:</p> <ol style="list-style-type: none">(1) the estimated Deconstruction cost, in current dollars at the time of filing, for the Facility, considering among other things:<ol style="list-style-type: none">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.

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 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 Facility 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. Excess soil material resulting from solar facility excavation shall be removed from 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. 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 30 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 traverse the site and are damaged in advance of Construction, during Construction, or during Deconstruction, 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. 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

- 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, 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.
- 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.

- 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 shall be done only when work shall not result in rutting, creating a mixing of subsoil and topsoil. Determination as to the potential of subsoil and topsoil mixing shall be in consultation with the Landowner or Landowner's designee.

10. Prevention of Soil Erosion

- A. The Facility Owner shall work with Landowners to prevent excessive erosion on land that has been disturbed by Construction or Deconstruction of a Facility. Consultation with the appropriate County SWCD by the Facility Owner shall take place to determine the appropriate methods to be implemented to control erosion.
- 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, with the consent of 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 replacement Financial Assurance is in place. The estimated cost of Deconstruction shall not take into account any salvage value of the Facility unless the County agrees in writing that all interests in the salvage value are subordinate 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 may select a separate 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 _____ 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 _____ County within the State of Illinois.

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

**STATE OF ILLINOIS
DEPARTMENT OF AGRICULTURE**

**FACILITY OWNER
a name of state limited liability
company**

By Raymond Poe, Director

By _____, Title

By Craig J. Sondgeroth, General Counsel

address

801 E. Sangamon Avenue, 62702
State Fairgrounds, POB 19281
Springfield, IL 62794-9281

_____, 20____

_____, 20____

AGRICULTURAL IMPACT MITIGATION AGREEMENT
between
Company
and the
ILLINOIS DEPARTMENT OF AGRICULTURE
pertaining to the
CONSTRUCTION of a kV Electric Transmission Line
in
County, Illinois

The Company (hereafter referred to as or Company) and the Illinois Department of Agriculture (IDOA) agree to the following standards and policies in this Agricultural Impact Mitigation Agreement (AIMA) that the Company will implement, as described in 's application to the Illinois Commerce Commission (ICC) for a Certificate in Good Standing, Docket No. 18- .

The project involves the construction of one kV electric transmission line approximately miles in length. Also included is a substation and related appurtenances on agricultural land in Illinois through County. This new electric transmission line is necessary to address a reliability problem and will provide a redundant pathway to service the area. The new line will then tie into the system. These standards and policies will serve to minimize the negative agricultural impacts that may result due to electric facility construction.

If construction does not commence within two years from the issuance of the Illinois Commerce Commission Certificate in Good Standing, the AIMA will be revised, with the Company's input, to reflect the IDOA's most current Electric Transmission Line Construction Standards and Policies. This AIMA, and any updated AIMA, will be filed with the Illinois Commerce Commission by company name.

The below prescribed construction standards and policies only apply to construction activities occurring partially or wholly on privately owned agricultural land. They do not apply to construction activities occurring on highway or railroad right-of-way, on other publicly owned land, or on privately owned land not used for agricultural purposes. The Company will, however, adhere to the construction standards relating to the repair of drainage tile (Item No. 5 in the AIMA) regardless of where drainage tile is encountered.

Conditions of the AIMA

The mitigative actions specified in the construction standards set forth in this AIMA will be implemented in accordance with the conditions listed below:

- A. All mitigative actions are subject to modification through negotiation by Landowners and a representative of the Company, provided such changes are negotiated in advance of any construction, maintenance or repairs. The policies included in this AIMA are subject to modification through negotiation with specific Landowners.
- B. The Company may negotiate with Landowners to carry out the mitigative actions that Landowners wish to perform themselves. In such instances, the Company will offer land owners the area commercial rate for their labor and machinery costs.

- C. All mitigative actions employed by the Company pursuant to this AIMA, unless otherwise specified in this document, will be implemented within 45 days of completion of the electric transmission facilities, weather and Landowner permitting. Temporary repairs will be made by the Company during the construction process as needed to minimize the risk of additional property damage that may result from an extended construction time period. If weather delays the completion of any mitigative action beyond the 45 day period, the Company will provide the Landowner(s) with a written estimate of the time needed for completion of the mitigative action.
- D. Mitigative actions pursuant to this AIMA will extend to associated future construction, maintenance and repairs by the Company.
- E. The Company will provide the IDOA with a set of mailing labels of all Landowners and known Tenants in such area, most likely on a county-by-county basis, who will be affected by the proposed electric line. As the list of affected Landowners and Tenants is updated, the Company will notify the IDOA of any additions or deletions. The IDOA will use the labels for notification of area-wide meetings with Landowners and the mailing of this AIMA to the Landowners and Tenants.

In addition, the Company shall provide postage for mailing a copy of this AIMA and associated documents to applicable Landowners. The IDOA shall determine the amount of postage and inform Company, which shall provide such postage reimbursement to the Department as soon as possible.

- F. The Company agrees to include this AIMA as part of any submissions to the Illinois Commerce Commission and hereby agrees to the inclusion of the terms contained in this AIMA in any environmental assessment and/or environmental impact statement that may be prepared on the project.
- G. The Company will implement the mitigative actions contained in this AIMA to the extent that they do not conflict with the requirements of any applicable federal, state, or local rules, regulations, or other permits and approvals that must be obtained by the Company for the project.
- H. 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.
- I. The Company will use good faith efforts to consult with both Landowners and Tenants of a given property as appropriate.
- J. The Company will incorporate by reference, the terms of this AIMA, in easement agreements executed with Landowners on agricultural land in Illinois. However, in the event of a conflict between this AIMA and an easement agreement, the easement will control.
- K. After construction the Company will provide the IDOA with "as built" drawings (strip maps) showing the location of all tile lines by survey station encountered in the construction of the electric transmission line. The drawings and GPS tile lines repair coordinates will be provided on a county basis for distribution by the IDOA to the respective local SWCD for the purpose of assisting Landowners with future drainage needs.

- L. In addition, after all construction is complete, all affected Landowners will receive a copy of the tile repairs location map with GPS coordinates identified as the electric cable crosses their property.
- M. In the event the Company elects not to construct the Electric Line, it may terminate this AIMA by providing written notice to IDOA.

Definitions

Agricultural Impact
Mitigation Agreement
(AIMA)

The Agreement between the Company () and the Illinois (AIMA) Department of Agriculture described herein.

Agricultural Land

Land used for cropland, hayland, pasture land, managed woodlands, truck gardens, farmsteads, commercial ag-related facilities, feedlots, livestock confinement systems, land on which farm buildings are located, and land in government set-aside programs.

Best Efforts

Diligent, good faith, and commercially reasonable efforts to achieve a given objective or obligation.

Company

shall use Best Efforts to ensure that any contractor or sub-contractor in the employ of the Company for the purpose of completing construction of the electric line or any mitigative actions covered by this Agreement shall be bound by the same terms.

Cropland

Land used for growing row crops, small grains, or hay; includes land which was formerly used as cropland, but is currently in a government set-aside program and pastureland comprised of prime farmland.

Drainage Tile

Artificial subsurface drainage system including, but not limited to, clay and concrete tile, vitrified sewer tile, corrugated plastic tubing, and stone drains.

Electric Line

Includes electric transmission lines and their associated components.

Landowner

Person(s) holding legal title to property on the electric line route from whom the Company is seeking, or has obtained, a temporary or permanent easement, or any person(s) legally authorized by a Landowner to make decisions regarding the mitigation or restoration of agricultural impacts to such Landowner's property.

Landowner's Designate

Any person(s) legally authorized by a Landowner to make decisions regarding the mitigation or restoration of agricultural impacts to such Landowner's property.

Non-agricultural Land	Any land that is not "Agricultural Land" as defined above.
Parent material	Underlying geologic material, located below the subsoil (B horizon) consisting of unweathered material; i.e., loess, glacial till/outwash, blue clay and bedrock. Parent material is not rooting media.
Prime Farmland	Agricultural land comprised of soils that are defined by the USDA Natural Resources Conservation Service as being "prime" soils (generally considered the most productive soils with the least input of nutrients and management).
Right-of-way	The permanent and temporary easements the Company acquires for the purpose of constructing and operating the electrical line.
Spread	Each major segment of project right-of-way where the electric line construction will occur. Spread length for a particular project may vary from a few miles up to ±60 miles.
Surface Drain(s)	Any surface drainage system such as shallow surface field drains, grassed waterways, open ditches, or any other conveyance of surface water.
Tenant	Any person lawfully residing on or leasing/renting of the 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 defined as the "A" horizon. The surface layer of the soil has the darkest color or the highest content of organic matter (as defined in the USDA County Soil Survey and verified with samples as stipulated under 2.A below).
Underlying Agreement	The written agreement with a 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 an electric transmission line on the property of the Landowner.

Electric Transmission Line Construction Standards and Policies

1. Support Structures

- A. Only single pole support structures will be used.
- B. Where the electric line is adjacent and parallel to highway and/or railroad right-of-way but on privately owned property, the support structures will be placed as close as practical to the edge of the highway and/or railroad right-of-way such that no part of the structure overhangs or occupies the highway and/or railroad right of way. The only exception may be at jogs or weaves on the highway alignment.

2. Land to be Purchased via Fee Simple Acquisition

No land will be purchased via fee simple acquisition.

3. Aboveground Facilities

There will be no aboveground facilities located on cropland other than the support structures, foundations, conductors, guy wires, and anchors. Access roads, if needed, will be located by AIMA with the Landowners. (See Item 18. Ingress and Egress)

4. Guy Wires and Anchors

- A. Concerted effort will be made to place guy wires and their anchors out of crop and hayland, placing them instead along existing utilization lines and on land not used for row crops or hay.
- B. All guy wires will be shielded with highly visible guards.

5. Drainage Tile

- A. If tiling is practiced in the area where a transmission line is to be constructed, the Company will send a letter to all Landowners to request information as to whether support structure locations will interfere with any drainage tile.
- B. If the Company is advised of possible drainage tile interference with a support structure location, then the Company will conduct an engineering evaluation to determine if the support structure can be relocated to avoid interference with the tile. The Company will make its best efforts to relocate the support structure if the engineering integrity of the electric transmission line can be maintained.
- C. If the tile is intercepted and will be relocated per an agreement between the Company and the affected Landowner, the tile shall be located not less than 50 feet upstream and 50 feet downstream of the interception. The tile shall be rerouted over that 100+ feet according to the recommendations of the *Illinois Drainage Guide*, Circular 1226, Cooperative Extension Service, College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign, 1984 (available at <http://www.wq.illinois.edu/DG/DrainageGuide.html>.) In no case shall the length of the rerouted tile exceed 125% of the length of original tile line that will be replaced.
- D. If the tile line is intercepted and repair is necessary, but no repair specifications are available from the county Soil and Water Conservation District, the Company shall reference the USDA Natural Resources Conservation Service Conservation Practice Standard document, "SUBSURFACE DRAIN" – CODE 606 (see Attachment 1), to aid in the repair of the damaged tile.

6. Construction During Wet Weather

Except as provided below, construction activities are not allowed on farmland where normal farming operations, such as plowing, disking, planting or harvesting, cannot take place due to wet soils. Wet weather conditions are to be determined on a field by field basis and not for the project as a whole.

- 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 Company in wet weather conditions.
- B. Construction activities on unprepared surfaces will be done only when work will not result in rutting creating a mixing of subsoil and topsoil. Determination as to the potential of subsoil and topsoil mixing will be in consultation with the underlying Landowner, or, if approved by the Landowner, his/her designated Tenant.

7. Damages to Private Property

- A. The Company will make every reasonable effort to repair, replace, or pay to repair or replace damaged private property within 45 days, weather and Landowner permitting, after the electric line has been constructed.
- B. If the Landowner is paid for any work that is needed to correct damage to his/her property, the Company will pay the ongoing commercial rate for such work.
- C. The Company will remain liable to correct damages to private property beyond the construction of the electric line, to associated future construction, maintenance, and repairs related to this electric line.
- D. The Company will reimburse Landowner, on a timely basis, for all agricultural production inputs (fertilizers of all types and kinds) needed to restore crop productivity to the right of way, the temporary work space, or any other portion of Landowner's property where crop yields are diminished by reason of the construction, repair, maintenance, and inspection activities of Company. This shall be a continuing obligation of Company for as long as and to the extent that Landowner can reasonably demonstrate diminished yields resulting from the above activities of Company. The Company shall make available to Landowner the name and contact information of a person acting on behalf of Company with whom the Landowner can communicate information with regard to diminished crop yields, and need for reimbursement of cost of agricultural inputs. That person will have a background related to soil productivity and crop production.

8. Restoration of Soil Compaction, Rutting, Fertilization and Liming

- A. The Company, unless the Landowner opts to do the restoration work, will rip to a depth of 18 inches all cropland, which has been traversed by construction equipment to alleviate compaction impacts, unless the Landowner specifies other arrangements that are acceptable to the Company. Decomposition shall be conducted according to the guidelines provided in Appendices A and B.
- B. The Company will rip or pay to have ripped all compacted and rutted soil, weather and Landowner permitting, after the electric transmission line has been constructed across any affected property.
- C. The Company will restore all compacted or rutted land as near as practicable to its original condition.

- D. If there is a dispute between the Landowner and the Company as to what areas need to be ripped, the depth at which compacted areas should be ripped, or the necessity or rates of lime and fertilizer application, the County Soil and Water Conservation District's opinion will be considered by the Company and the Landowner.

9. Fertilization of Disturbed Soils

- A. If desired by the Landowner, the Company will agree to apply fertilizer and lime or pay to have fertilizer and lime applied to land disturbed by construction at a rate specified by the local University of Illinois Extension office to help restore the fertility of disturbed soils and enhance the establishment of a vegetative cover to control soil erosion.
- B. Unless other arrangements are made with the Landowner, the Company will apply fertilizer and lime, or pay to have fertilized and limed, the disturbed right-of-way within 45 days, weather and Landowner permitting, after the electric line has been constructed.

10. Repair of Damaged Soil Conservation Practices

- A. The Company will repair or pay the Landowner to repair any soil conservation practices (such as terraces, grassed waterways, etc.), which are damaged by the electric line's construction.
- B. If the Company is responsible for repairing any damaged soil conservation practices, the repairs will be made in accordance with the specifications of the county Soil and Water Conservation Districts. All repairs should be completed per SWCD specifications, plus the Landowner must maintain installed practices for 10 years.
- C. The work set forth in this section will be done within 45 days, weather and Landowner permitting, after the electric line has been constructed.

11. Removal of Construction Debris

- A. The Company will remove from the Landowner's property all material that was not there before construction commenced and which is not an integral part of the electric line. (Note: Materials to be removed on a daily basis include light debris, paper cups, soda cans, etc. generated by the construction crews.)
- B. The Company will make all reasonable efforts to ensure that all construction debris will be removed within 45 days, weather and Landowner permitting, after the electric line has been constructed.

12. Preventing Erosion

- A. The Company will work with Landowners to prevent or correct excessive erosion on all lands disturbed by construction by implementing reasonable methods to control erosion as suggested by the Landowner.
- B. If the Landowner (A) does not suggest a reasonable erosion control method, or (B) does not suggest any method of erosion control, the Company will follow the recommendations of the County Soil and Water Conservation District.

- C. On properties subject to erosion, the Company will use all reasonable efforts to ensure that erosion control measures are implemented, or pay the Landowner to do so, within 45 days, weather and Landowner permitting, after the electric line has been constructed.

13. Soil Removed from Support Structures Holes/Foundations

- A. It is expected that most soil material will be backfilled in and around the hole augered for the structures. If the Landowner expresses concern regarding remaining soil, the Company will agree to remove the spoil material or pay the comparable area hauling rate to the Landowner for removal of the spoil material.
- B. If spoil material is to be removed, the Company will remove or pay to have removed the spoil material within 45 days, weather and Landowner permitting, following the construction of the electric line.

14. Clearing of Trees and Brush from the Easement

- A. If trees are to be removed from privately owned land, the Company will consult with the Landowner to see if there are trees of commercial or other value to the Landowner that are slated to be removed.
- B. If there are trees of commercial or other value to the Landowner, the Company will allow the Landowner the right to retain ownership of the trees with the disposition of the trees to be negotiated prior to the commencement of land clearing.
- C. The Company will follow the Landowner's desires, if reasonable, regarding the disposition of trees and brush of no value to the Landowner by burning, chipping or complete removal from any affected property.

15. Interference with Irrigation Systems

- A. If the construction of an electric transmission line interrupts an operational (or soon to be operational) spray irrigation system, the Company will establish with the Landowner an acceptable amount of time the irrigation system may be out of service.
- B. If, as a result of Construction of an electric transmission line, an irrigation system interruption results in crop damages, the Landowner will be compensated for all such crop damages per the applicable Underlying Agreement.
- C. If it is feasible and mutually acceptable to the Company and the Landowner, temporary measures will be implemented to allow an irrigation system to continue to operate across land on which the electric transmission line is being constructed.

16. Interference with Neighboring Communications Circuits

If interference should develop between the Company's new facilities and a Landowner's communication circuits, the Company will seek to eliminate such interference at its own expense within 45 days of receiving a verbal or written notice from the affected Landowner.

17. Advance Notice of Access to Private Property

- A. The Company will provide the Landowner with a minimum of 24 hours prior notice before accessing his/her property for the purpose of constructing the electric line.

- B. Prior notice shall first consist of personal contact or a telephone contact, whereby the Landowner is actually informed of the Company's intent to access the Landowner's property. If the Landowner cannot be reached in person or by telephone, the Company will send by certified mail to the Landowner's home a dated, written notice of the Company's intent. The Landowner need not acknowledge receipt of the second notice before the Company enters the Landowner's property.

18. Ingress and Egress Routes

Prior to the electric line's installation, the Company and the Landowner will reach a mutually acceptable agreement on the route that will be utilized for entering and leaving the electric transmission line right-of-way should access to the right-of-way not be practical or feasible from adjacent segments of the electric line right-of-way, from public highway or railroad right-of-way or from other suitable public access.

19. Reporting of Inferior Agricultural Impact Mitigation Work

Prior to the construction of the electric line, the Company will provide the Landowner with a number to call to alert the Company should the Landowner observe inferior work relating to the agricultural impact mitigation work that was performed on the Landowner's property.

20. Indemnification

The Company will indemnify all owners and farm tenants of agricultural land upon which such electric line is installed, their heirs, successors, legal representatives, assigns (collectively "Indemnitees"), from and against all claims by third parties losses incurred thereby, and reasonable expenses, resulting from or arising out of personal injury, death, injury to property, or other damages or liabilities of any sort related to the design, laying, maintenance, removal, repair, use or existence of such electric line, including damages caused by such electric line 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 Indemnitees provided further that such Indemnitees shall tender any such claim as soon as possible upon receipt of notice thereof to the Company.

Concurrence of the Parties to this AIMA

Company and the Illinois Department of Agriculture concur that this AIMA is the complete AIMA governing the mitigation of agricultural impacts that may result from the construction of one electric line by the Company. The Company and the Department further concur that reference to the Company's adherence to this AIMA should be included in the opinions and findings of the Illinois Commerce Commission should the Commission issue any Certificate of Public Convenience and Necessity for electric lines that may impact agricultural land.

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

**STATE OF ILLINOIS
DEPARTMENT OF AGRICULTURE**

, LLC

By _____, Director

By _____, title

By John Teefey, General Counsel

address

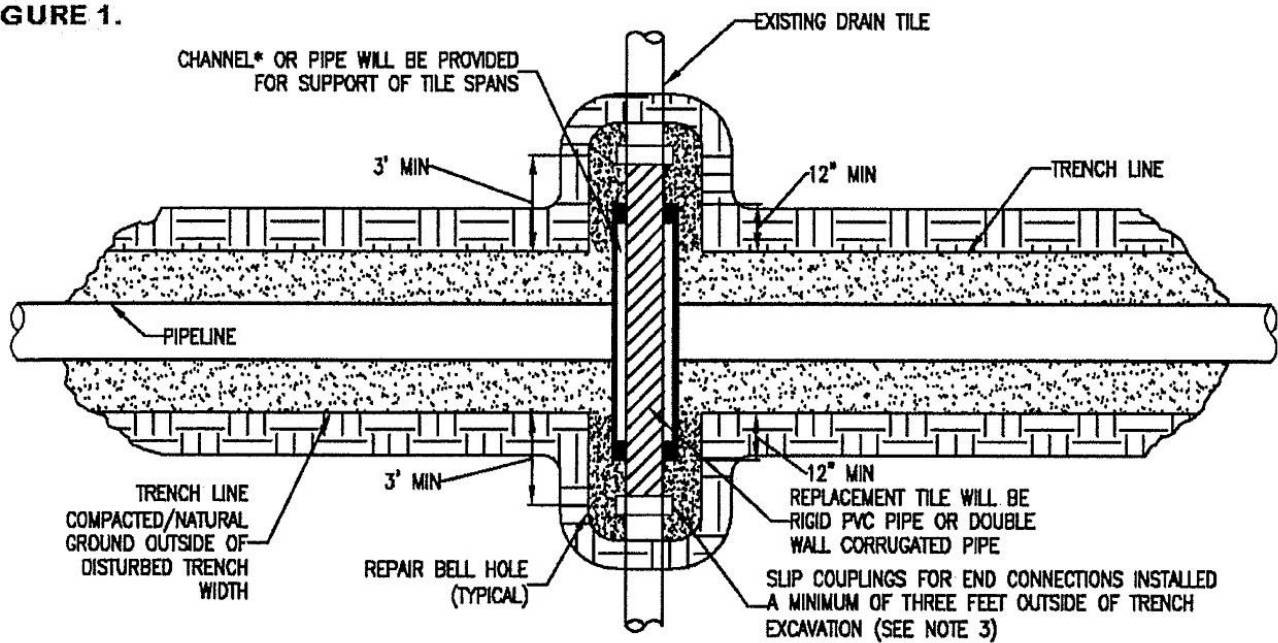
801 E. Sangamon Avenue, 62702
State Fairgrounds, POB 19281
Springfield IL 62794-9281

_____, 2020

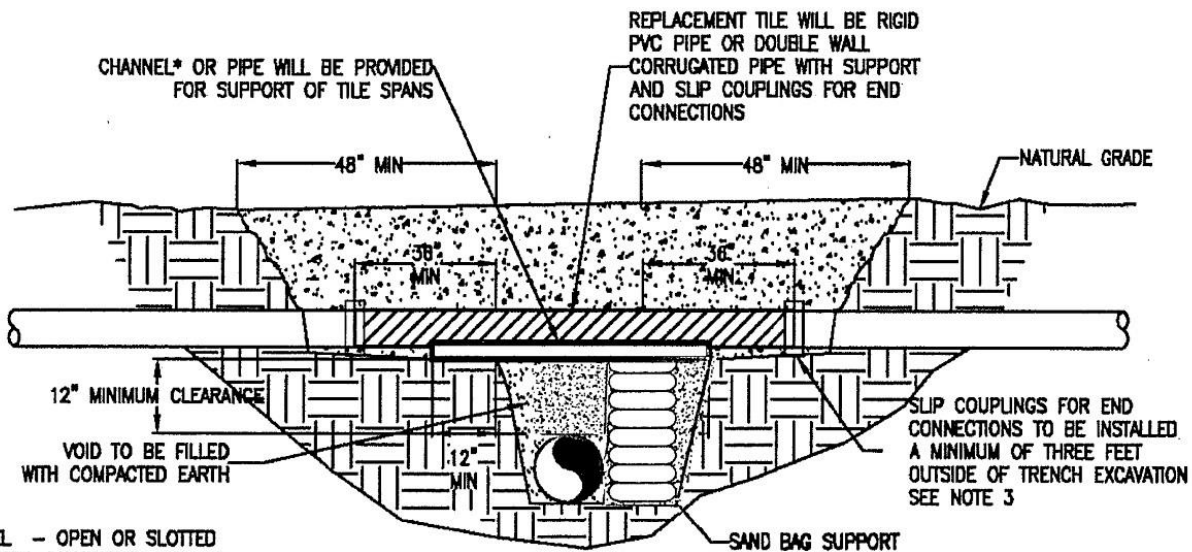
_____, 2020

Appendix B: Construction Standards

FIGURE 1.



PLAN
N.T.S.



CROSS SECTION
N.T.S.

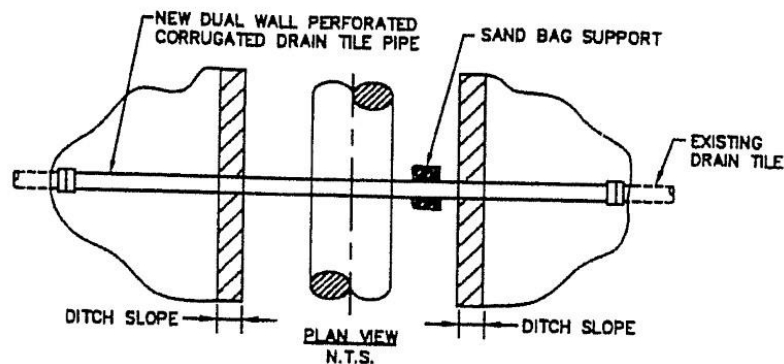
*CHANNEL - OPEN OR SLOTTED CORRUGATED GALVANIZED, PVC OR ALUMINUM CRADLE TO SUPPORT DRAIN TILE.

NOTE:

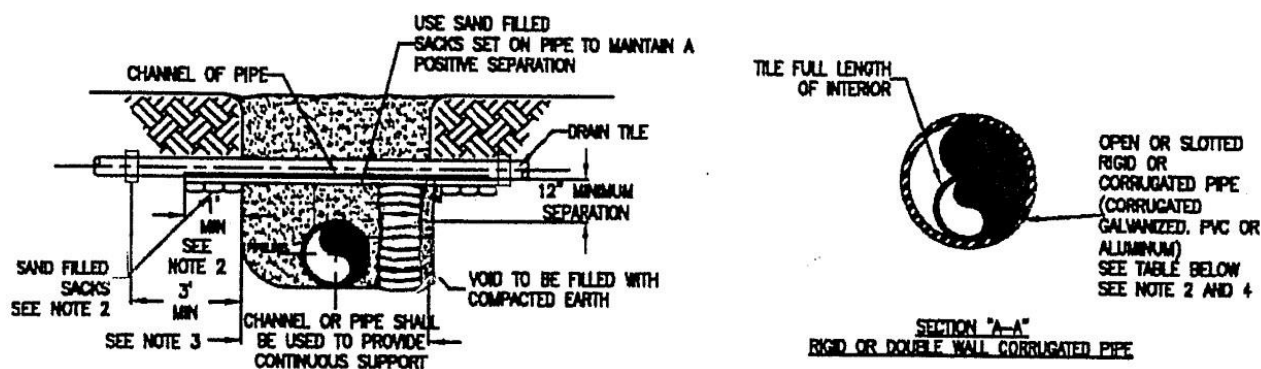
1. IMMEDIATELY REPAIR TILE IF WATER IS FLOWING THROUGH TILE AT TIME OF TRENCHING. IF NO WATER IS FLOWING AND TEMPORARY REPAIR IS DELAYED, OR NOT MADE BY THE END OF THE WORK DAY, A SCREEN OR APPROPRIATE 'NIGHT CAP' SHALL BE PLACED ON OPEN ENDS OF TILE TO PREVENT ENTRAPMENT OF ANIMALS ETC.
2. CHANNEL OR 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



END VIEWS

MINIMUM SUPPORT TABLE				
TILE SIZE	CHANNEL SIZE		PIPE SIZE	
3"	4" @ 5.4	#11	4"	STD. WT.
4"-5"	5" @ 8.7	#11	8"	STD. WT.
8"-9"	7" @ 9.8	#11	9"-10"	STD. WT.
10"	10" @ 15.3	#11	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

Appendix A.

Guidelines for Conducting Proper and Successful Decompaction

1. Decompaction is required when all three conditions apply.
 - A. the area has been trafficked or traversed by vehicles or construction equipment, and
 - B. the soil penetrometer readings are 300 psi or greater, and
 - C. The soil strength (psi) in the right-of-way area is greater than that of the non-trafficked area.
2. An Environmental and/or Agricultural Inspector (AI), with experience and training in the proper identification of compacted soil and operation methods of deep decompaction tools is required to observe the daily operation of the ripper/subsoiler to ensure the conditions are appropriate for decompaction efforts and that the proper equipment is utilized and that equipment is set-up and operated correctly.
3. To achieve the most effective shatter of the compacted soil the following guidelines have been established:
 - A. Conduct ripping when the soil is dry. Follow the "Soil Plasticity Test Procedures" detailed in Appendix B to determine if soil conditions are adequately dry to conduct decompaction efforts.
 - B. Deep ripping shall be conducted using a ripper or subsoiling tool with a shank length of no less than 18 inches and a shank spacing of approximately the same measurement as the shank length.
 - C. Use a ripper with a knife length of no less than 2 inches more than the desired depth of decompaction.
 - D. To best promote revegetation and restore crop production, a total depth of 30 or more inches of soil (topsoil plus subsoil) is required.
 - E. The minimum depths of decompaction stated above in 3.D. are required where possible. A safe distance from sub-surface structures (tile drains, pipelines, buried utilities, bedrock, etc.) must be maintained at all times. Where such structures exist, a lesser depth of decompaction will be required to prevent damage to equipment and the structures as well as to maintain a safe work environment. The allowable decompaction depth in these instances will be determined on a site by site basis.
 - F. When the knives are in the soil to the desired depth, the tongue of the ripper should be parallel to the surface of the ground.
 - G. Select a tractor that has enough horsepower to pull the ripper at a speed of 1.5 to 2 mph and whose footprint is of equal or lesser width than the ripper. Tracked equipment is preferred and typically required to achieve this criteria.
 - H. The ripper shanks should not create ruts, channels, or mixing of the sub-soil with topsoil. A speed of 1.5 to 2 mph is recommended to minimize the risk of rutting and soil mixing. The ideal operating speed can vary with soil characteristics, tractor and ripping tool used. An excessive travel speed will often increase mixing of soil horizons.
 - I. When the equipment is set up and operated correctly, the ripper should create a wave across the surface of the ground as it lifts and drops the soil.

- J. Make one ripping pass through the compacted area. Using a penetrometer, the AI will measure the PSI between the ripped knife tracks to determine if the single ripping pass was successful. Additional passes should only be used where needed as they may reduce the effectiveness of the ripping by recompacting the soil shattered in the previous pass.
- K. If the first pass does not successfully decompact the soil, additional passes will be needed. Should multiple passes of the ripper be needed to achieve decompaction between the knives tracks of the ripping tool, the subsequent passes should be positioned so the knife tracks from the previous pass are split by the second pass. If three or more passes have been made and sufficient decompaction has not yet been achieved the AI may choose to halt further decompaction efforts in that area until conditions improve or better methods are determined.
- L. Following ripping, all stone and rock three or more inches in size which has been lifted to the surface shall be collected and removed from agricultural areas.
- M. After ripping has been conducted, do not allow unnecessary traffic on the ripped area.
- N. In agricultural lands and croplands that will not be replanted to vegetation by the Company, recommend to landowners to plant a cover crop (cereal rye, clover, alfalfa, tillage radish, turnips, etc.) following decompaction. Reduced compaction created by the ripper pass will not remain over time without subsequent root penetration. Root penetration into the shattered soil is necessary to establish permanent stabilized channels to conduct air and water into the soil profile. Two good sources for landowner cover crop education are <http://www.mccc.msu.edu/CCinfo/cropbycrop.html> and <http://mcccdev.anr.msu.edu/>. For local expertise, consult with your county's Soil and Water Conservation District /USDA Natural Resource Conservation Service (NRCS) office for cover crop selection and compliance with NRCS planting deadlines.

60415

Appendix B.

Soil Plasticity Test Procedures

The Agricultural Inspector will test the consistency of the surface soil to a depth of approximately 4 to 8 inches using the Field Plasticity Test procedure developed from the *Annual Book of ASTM Standards, Plastic Limit of Soils* (ASTM D-4318).

1. Pull a soil plug from the area to be tilled, moved, or trafficked to a depth of 4-8 inches.
2. Roll a portion of the sample between the palms of the hands to form a wire with a diameter of one-eighth inch.
3. The soil consistency is:
 - A. Tillable (able to be worked) if the soil wire breaks into segments not exceeding 3/8 of an inch in length.
 - B. Plastic (not tillable) if the segments are longer than 3/8 of an inch before breaking.
4. This Procedure is to be used to aid in determining when soil conditions are dry enough for construction activities to proceed.
5. Once the soil consistency has been determined to be of adequate dryness, the plasticity test is not required again until the next precipitation event.

ELECTRIC TRANSMISSION LINE CONSTRUCTION STANDARDS AND POLICIES

**Recommended by the
Illinois Department of Agriculture**

The following electric line construction standards and policies are recommended by the Illinois Department of Agriculture (IDOA) to help preserve the integrity of any agricultural land that is impacted by electric line construction. They were developed with the cooperation of agricultural agencies, organizations, landowners, tenants, drainage contractors and electric utility companies.

The below prescribed construction standards and policies are applicable to construction activities occurring partially or wholly on privately owned agricultural land. With the exception of Item No. 3, they are not intended to apply to construction activities occurring entirely on public right-of-way, railroad right-of-way, or privately owned land that is not agricultural land.

Conditions

The mitigative actions specified in the construction standards and policies set forth below will be implemented in accordance with the conditions listed below:

- A. All mitigative actions are subject to modification through negotiation by landowners and a representative of the Company, provided such changes are negotiated in advance of any construction, maintenance, or repairs.
- B. The Company may negotiate with landowners to carry out the mitigative actions that landowners wish to perform themselves.
- C. All mitigative actions employed by the Company, unless otherwise specified in these construction standards and policies or in an easement negotiated with an individual landowner, will be implemented within 45 days of completion of the electric transmission line facilities on any affected property, weather and landowner permitting. Temporary repairs will be made by the Company during the construction process as needed to minimize the risk of additional property damage that may result from an extended construction time period. If weather delays the completion of any mitigative action beyond the 45 day period, the Company will provide the affected landowner(s) with a written estimate of the time needed for completion of the mitigative action.
- D. All mitigative actions will extend to associated future construction, maintenance, and repairs by the Company.
- E. Every effort will be made by the Company to determine all affected tenants along the route of the electric transmission line. The Company will endeavor to keep the tenants informed of the project=s status, meetings, and other factors that may have an impact upon their farming operations.
- F. The Company agrees to include a statement of its adherence to the construction standards and policies in any environmental assessment and/or environmental impact statement that may be prepared on the project.

- G. The Company will implement all mitigative 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 Company for the project.
- H. If any mitigative action(s) is held to be unenforceable, no other provision shall be affected by that holding, and the remainder of the mitigative actions shall be interpreted as if they did not contain the unenforceable provision.

Definitions

- Agricultural land - Land used for cropland, hayland, pasture land, managed woodlands, truck gardens, farmsteads, commercial ag-related facilities, feedlots, livestock confinement systems, land on which farm buildings are located, and land in government set-aside programs.
- Company - Utility company, and any contractor or sub-contractor in the employ of the Company, for the purpose of completing the electric transmission line or any mitigative actions contained herein.
- Cropland - Land used for growing row crops, small grains, or hay; includes land which was formerly used as cropland, but is currently in a government set-aside program and pastureland comprised of prime farmland.
- Electric Line - Includes the electric transmission line and its related appurtenances.
- Landowner - Person(s) holding legal title to property on the electric transmission line route from whom the Company is seeking, or has obtained, a temporary or permanent easement, or any person(s) legally authorized by a landowner to make decisions regarding the mitigation or restoration of agricultural impacts to such landowner's property.
- Prime farmland - Agricultural land comprised of soils that are defined by the USDA Natural Resources Conservation Service as being "prime" soils (generally considered the most productive soils with the least input of nutrients and management).
- Right-of-way - Includes the permanent and temporary easements that the Company acquires for the purpose of constructing and operating the electric transmission line.
- Topsoil - The uppermost layer of the soil that has the darkest color or the highest content of organic matter, more specifically defined as the "A" horizon.

Electric Transmission Line Construction Standards and Policies

1. Support Structures

- A. Only single pole support structures will be used.
- B. Where the electric line is adjacent and parallel to highway and/or railroad right-of-way but on privately owned property, the support structures will be placed on the highway and/or railroad right-of-way or a maximum of one foot from the edge of the highway and/or railroad right-of-way. The only exception may be at jogs or weaves on the highway alignment.
- C. The highest priority will be given to locating the electric line parallel and adjacent to highway and/or railroad right-of-way. When this is not possible, all support poles will be spaced in such a manner so as to minimize their placement on cropland (i.e., longer than normal spans will be utilized when traversing cropland).

2. Land to be Purchased via Fee Simple Acquisition

No land will be purchased via fee simple acquisition.

3. Aboveground Facilities

There will be no aboveground facilities located on cropland other than the support structures, conductors, guy wires, and anchors.

4. Guy Wires and Anchors

- A. Concerted effort will be made to place guy wires and their anchors out of crop and hayland, placing them instead along existing utilization lines and on land not used for row crops or hay.
- B. All guy wires will be shielded with highly visible guards.

5. Drainage Tile

- A. If tiling is practiced in the area where an electric line is to be constructed, the Company will send a letter to all landowners to request information as to whether support structure locations will interfere with any drainage tile.
- B. If the Company is advised of possible drainage tile interference with a support structure location, the Company will relocate the support structure to avoid interference with the tile.
- C. In the event that the landowner does not advise the Company of a tile location problem and one is found to exist when drilling the hole for the support structure, the Company will relocate in the support structure and repair the tile line if it is damaged in

accordance with the repair specifications of the county Soil and Water Conservation District.

6. Damages to Private Property

- A. The Company will make every reasonable effort to repair, replace, or pay to repair or replace damaged private property within 45 days, weather and landowner permitting, after the electric line had been constructed across the effected property.
- B. If the landowner is paid for any work that is needed to correct damage to his/her property, the Company will pay the ongoing commercial rate for such work.
- C. The Company will remain liable to correct damages to private property beyond the construction of the electric line, to associated future construction, maintenance, and repairs as well.

7. Restoration of Soil for Compaction and Rutting

- A. The Company will chisel to a depth of 18 inches all cropland, which has been traversed by construction equipment to alleviate compaction impacts, unless the landowner specifies other arrangements that are acceptable to the Company.
- B. The Company will chisel to a depth of 12 inches all pasture and hayland that has been traversed by construction equipment to alleviate compaction impacts, unless the landowner specifies other arrangements that are acceptable to the Company.
- C. The Company will chisel or pay to have chiseled all compacted and rutted soil within 45 days, weather and landowner permitting, after the electric line has been constructed across any affected property.

8. Fertilization of Disturbed Soils

- A. If desired by the landowner, the Company will agree to apply fertilizer and lime to land disturbed by construction at a rate specified by the local University of Illinois Extension office to help restore the fertility of disturbed soils and enhance the establishment of a vegetative cover to control soil erosion.
- B. Unless other arrangements are made with the landowner, the Company will apply fertilizer and lime to the disturbed right-of-way within 45 days, weather and landowner permitting, after the electric line has been constructed across an affected property.

9. Repair of Damaged Soil Conservation Practices

- A. The Company will repair or pay the landowner to repair any soil conservation practices (such as terraces, grassed waterways, etc.), which are damaged by the electric line's construction.
- B. If the Company will responsible for repairing any damaged soil conservation practices, the repairs will be made in accordance with the specifications of the county Soil and

Water Conservation Districts (unless the landowner and the Company agree to the other repair specifications).

- C. The Company will repair or pay to have repaired damaged soil conservation practices within 45 days, weather and landowner permitting, of the electric line's construction across any affected property.

10. Removal of Construction Debris

- A. The Company will remove from the landowner's property all material that was not there before construction commenced and which is not an integral part of the electric line. (Note: Such material to be removed would also include litter generated by the construction crews.)
- B. The Company will make all reasonable efforts to insure that all construction debris will be removed within 45 days, weather and landowner permitting, after the electric line has been constructed.

11. Preventing Erosion

- A. The Company will work with landowners to prevent or correct excessive erosion on all lands disturbed by construction by implementing reasonable methods to control erosion as suggested by the landowner.
- B. If the landowner A) does not suggest a reasonable erosion control method, or B) does not suggest any method of erosion control, the Company will follow the recommendations of the county Soil and Water Conservation District.
- C. The Company will use all reasonable efforts to insure that erosion control measures are implemented, or pay the landowner to do so, within 45 days, weather and landowner permitting, following the construction of the electric line across any affected property subject to erosion.

12. Soil Removed from Support Structures Holes/Foundations

- A. It is expected that most soil material will be back-filled in and around the hole augered for the structures. If the landowner expresses concern regarding remaining soil, the Company will agree to remove the spoil material or pay the comparable area hauling charge to the landowner for removal of the spoil material.
- B. If spoil material is to be removed, the Company will remove or pay to have removed the spoil material within 45 days, weather and landowner permitting, following the construction of the electric line across any affected property.

13. Clearing of Trees and Brush from the Easement

- A. If trees are to be removed from privately owned land, the Company will consult with the landowner to see 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 Company will allow the landowner the right to retain ownership of the trees with the disposition of the trees to be negotiated prior to the commencement of land clearing.
- C. The Company will follow the landowner's desires, if reasonable, regarding the disposition of trees and brush of no value to the landowner by burning, burial, or complete removal from any affected property.

14. Interference with Neighboring Communications Circuits

If interference should develop between the Company's new facilities and a landowner's communication circuits, the Company will seek to eliminate such interference at its own expense within 45 days of receiving a verbal or written notice from the affected landowner.

15. Advance Notice of Access to Private Property

- A. The Company will provide the landowner with a minimum of 24 hours prior notice before accessing private property for the purpose of constructing the electric line.
- B. Prior notice shall first consist of a personal contact or a telephone contact, whereby the landowner is actually informed of the Company's intent to access the landowner's land. If the landowner cannot be reached in person or by telephone, the Company will mail or hand deliver to the landowner's home a dated, written notice of the Company's intent. The landowner need not acknowledge receipt of the second notice before the Company enters the landowner's property.

16. Reporting of Inferior Agricultural Impact Mitigation Work

Prior to the construction of the electric line, the Company will provide the landowner with a number to call to alert the Company should the landowner observe inferior work relating to the agricultural impact mitigation work that performed on the owner's property.

17. Indemnification

The Company will indemnify all owners of agricultural land upon which such electric line is installed, 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 construction, maintenance, removal, repair, use or existence of such electric line, whether heretofore or hereafter installed, including damage to such electric line 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 owners, their heirs, successors, legal representatives, and assigns.



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Livingston County, Illinois**

US Man Solar



July 5, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Livingston County, Illinois
Survey Area Data: Version 16, Aug 31, 2021

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

Date(s) aerial images were photographed: Aug 3, 2019—Aug 24, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
69A	Milford silty clay loam, 0 to 2 percent slopes	1.3	2.2%
91A	Swygert silty clay loam, 0 to 2 percent slopes	8.9	14.9%
91B2	Swygert silty clay loam, 2 to 4 percent slopes, eroded	25.8	42.9%
235A	Bryce silty clay, 0 to 2 percent slopes	1.4	2.3%
244A	Hartsburg silty clay loam, 0 to 2 percent slopes	1.1	1.8%
448B2	Mona silt loam, 2 to 5 percent slopes, eroded	0.2	0.4%
715A	Arrowsmith silt loam, 0 to 2 percent slopes	3.9	6.5%
3451A	Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	17.5	29.1%
Totals for Area of Interest		60.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas

are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Livingston County, Illinois

69A—Milford silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2smzk
Elevation: 510 to 930 feet
Mean annual precipitation: 34 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 155 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Milford, drained, and similar soils: 93 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Milford, Drained

Setting

Landform: Depressions on lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Clayey lacustrine deposits

Typical profile

Ap - 0 to 9 inches: silty clay loam
A - 9 to 22 inches: silty clay
Bg - 22 to 50 inches: silty clay loam
Cg - 50 to 60 inches: stratified sandy loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Hydric soil rating: Yes

Minor Components

Peotone, drained

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow

Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Orthents, clayey

Percent of map unit: 1 percent

Landform: Ground moraines, lake plains

Landform position (two-dimensional): Summit

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

91A—Swygert silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t6zn

Elevation: 540 to 840 feet

Mean annual precipitation: 34 to 40 inches

Mean annual air temperature: 46 to 54 degrees F

Frost-free period: 155 to 190 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Swygert and similar soils: 98 percent

Minor components: 2 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swygert

Setting

Landform: End moraines, ground moraines, till plains

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Parent material: Thin mantle of loess over clayey lacustrine deposits over clayey till

Typical profile

Ap - 0 to 12 inches: silty clay loam

Bt1 - 12 to 26 inches: silty clay

2Bt2 - 26 to 51 inches: silty clay

2Cd - 51 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 35 to 55 inches to densic material

Drainage class: Somewhat poorly drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)

Depth to water table: About 12 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: C/D

Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie

Hydric soil rating: No

Minor Components

Bryce, drained

Percent of map unit: 2 percent

Landform: Ground moraines, end moraines

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie

Hydric soil rating: Yes

91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2st2l

Elevation: 540 to 840 feet

Mean annual precipitation: 34 to 40 inches

Mean annual air temperature: 46 to 54 degrees F

Frost-free period: 155 to 190 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Swygert, eroded, and similar soils: 98 percent

Minor components: 2 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swygert, Eroded

Setting

Landform: Ground moraines, end moraines

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Clayey lacustrine deposits over clayey till

Typical profile

Ap - 0 to 7 inches: silty clay loam

Bt1 - 7 to 30 inches: silty clay

2Bt2 - 30 to 48 inches: silty clay

2Cd - 48 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 4 percent

Depth to restrictive feature: 35 to 51 inches to densic material

Drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)

Depth to water table: About 12 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie

Hydric soil rating: No

Minor Components

Bryce, drained

Percent of map unit: 2 percent

Landform: End moraines, ground moraines

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Linear

Across-slope shape: Concave

Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie

Hydric soil rating: Yes

235A—Bryce silty clay, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t6zp
Elevation: 540 to 770 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 155 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Bryce, drained, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bryce, Drained

Setting

Landform: Ground moraines, glacial lakes (relict), till-floored lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, talf
Down-slope shape: Linear, concave
Across-slope shape: Concave
Parent material: Clayey glaciolacustrine deposits over clayey till

Typical profile

Ap - 0 to 13 inches: silty clay
Btg - 13 to 45 inches: silty clay
2BCg - 45 to 58 inches: silty clay
2Cg - 58 to 66 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline to very slightly saline (0.2 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D

Custom Soil Resource Report

Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Minor Components

Orthents, clayey

Percent of map unit: 2 percent
Landform: Ground moraines, lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Rantoul, drained

Percent of map unit: 2 percent
Landform: Depressions on till-floored lake plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave, linear
Across-slope shape: Concave
Ecological site: R110XY024IL - Ponded Depressional Sedge Meadow
Other vegetative classification: Grass/Prairie (Herbaceous Vegetation)
Hydric soil rating: Yes

Urban land

Percent of map unit: 1 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

244A—Hartsburg silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 5y32
Elevation: 540 to 930 feet
Mean annual precipitation: 32 to 40 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Hartsburg and similar soils: 95 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hartsburg

Setting

Landform: Flats on ground moraines
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess over silty lacustrine deposits

Typical profile

H1 - 0 to 17 inches: silty clay loam
H2 - 17 to 34 inches: silty clay loam
H3 - 34 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 40 percent
Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: R108AY007IL - Wet Loess Upland Prairie
Hydric soil rating: Yes

Minor Components

Drummer

Percent of map unit: 3 percent
Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108AY013IL - Wet Outwash Prairie, R110XY008IL - Wet Glacial
Drift Upland Prairie
Hydric soil rating: Yes

Harpster

Percent of map unit: 1 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R110XY025IL - Ponded Calcareous Sedge Meadow,
R108AY009IL - Ponded Calcareous Loess Sedge Meadow
Hydric soil rating: Yes

448B2—Mona silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: 5y50
Elevation: 540 to 930 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 140 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Mona and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mona

Setting

Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loess and loamy outwash over silty clay till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 31 inches: clay loam
H3 - 31 to 36 inches: silty clay
H4 - 36 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: 32 to 54 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low (0.02 to 0.06 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R110XY007IL - Moist Glacial Drift Upland Prairie
Hydric soil rating: No

Minor Components

Bryce

Percent of map unit: 5 percent
Landform: Glacial lakes (relict), ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R110XY008IL - Wet Glacial Drift Upland Prairie
Hydric soil rating: Yes

715A—Arrowsmith silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2ytdp
Elevation: 600 to 890 feet
Mean annual precipitation: 36 to 39 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 158 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Arrowsmith and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arrowsmith

Setting

Landform: Ground moraines
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 12 inches: silt loam
Bt - 12 to 30 inches: silty clay loam
BCK - 30 to 39 inches: silt loam
C - 39 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Custom Soil Resource Report

Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B/D
Ecological site: R108AY006IL - Loess Upland Prairie
Hydric soil rating: No

Minor Components

Sable

Percent of map unit: 5 percent
Landform: Swales
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R108BY009IL - Ponded Loess Sedge Meadow
Hydric soil rating: Yes

Hartsburg, drained

Percent of map unit: 2 percent
Landform: Ground moraines, flats
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R108AY008IL - Ponded Loess Sedge Meadow, R108AY007IL -
Wet Loess Upland Prairie
Hydric soil rating: Yes

Spaulding, drained

Percent of map unit: 2 percent
Landform: Swales
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R108AY009IL - Ponded Calcareous Loess Sedge Meadow
Hydric soil rating: Yes

3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration

Map Unit Setting

National map unit symbol: 2ww9g

Elevation: 430 to 720 feet

Mean annual precipitation: 34 to 39 inches

Mean annual air temperature: 47 to 56 degrees F

Frost-free period: 158 to 172 days

Farmland classification: Prime farmland if protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Lawson, frequently flooded, and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lawson, Frequently Flooded

Setting

Landform: Flood plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Silty alluvium

Typical profile

Ap - 0 to 14 inches: silt loam

A - 14 to 33 inches: silt loam

Cg - 33 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: About 12 to 24 inches

Frequency of flooding: FrequentNone

Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: B/D

Ecological site: F108AY019IL - Silty Floodplain Forest, F110XY028IL - Silty-Loamy Floodplain Forest

Custom Soil Resource Report

Hydric soil rating: No

Minor Components

Sawmill, frequently flooded

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: R110XY029IL - Wet Floodplain Sedge Meadow, R108AY018IL -
Ponded Floodplain Marsh

Hydric soil rating: Yes

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Solar Arrays, Soil-based Anchor Systems

Ground-based Solar Arrays, Soil-penetrating Anchor Systems

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.

Custom Soil Resource Report

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.

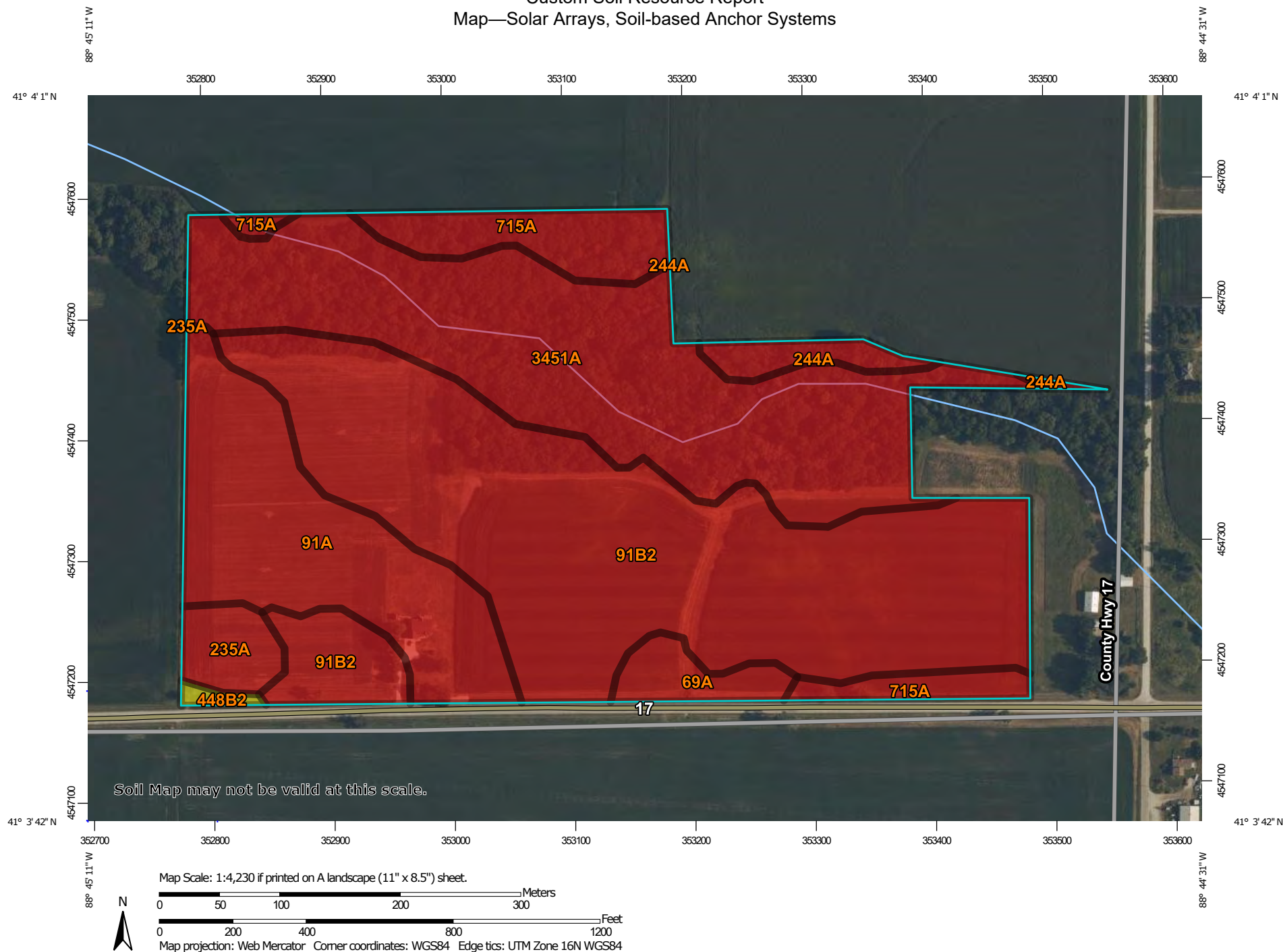
References:

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.

Custom Soil Resource Report


Map—Solar Arrays, Soil-based Anchor Systems




Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)





 Area of Interest (AOI)

Background





 Aerial Photography

Soils





Soil Rating Polygons

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available


Soil Rating Lines

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available



Soil Rating Points

-  Very limited
-  Somewhat limited
-  Not limited
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

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

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Livingston County, Illinois
Survey Area Data: Version 16, Aug 31, 2021

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

Date(s) aerial images were photographed: Aug 3, 2019—Aug 24, 2019

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

Tables—Solar Arrays, Soil-based Anchor Systems

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
69A	Milford silty clay loam, 0 to 2 percent slopes	Very limited	Milford, drained (93%)	Ponding (1.00)	1.3	2.2%
				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 (1%)	Shrink-swell (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Frost action (0.50)		
				Hillslope position (0.25)		
91A	Swygert silty clay loam, 0 to 2 percent slopes	Very limited	Swygert (98%)	Low strength (1.00)	8.9	14.9%
				Shrink-swell (0.87)		
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Frost action (0.50)		
			Bryce, drained (2%)	Ponding (1.00)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
91B2	Swygert silty clay loam, 2 to 4 percent slopes, eroded	Very limited	Swygert, eroded (98%)	Shrink-swell (1.00)	25.8	42.9%
				Low strength (1.00)		
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Frost action (0.50)		
			Bryce, drained (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
235A	Bryce silty clay, 0 to 2 percent slopes	Very limited	Bryce, drained (95%)	Ponding (1.00)	1.4	2.3%
				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)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Rantoul, drained (2%)	Hillslope position (0.25)		
				Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Shrink-swell (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
244A	Hartsburg silty clay loam, 0 to 2 percent slopes	Very limited	Hartsburg (95%)	Ponding (1.00)	1.1	1.8%
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
			Drummer (3%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (0.96)		
				Steel corrosion (0.75)		
			Harpster (1%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (0.98)		
				Steel corrosion (0.75)		
448B2	Mona silt loam, 2 to 5 percent slopes, eroded	Somewhat limited	Mona (95%)	Low strength (1.00)	0.2	0.4%
				Shrink-swell (0.77)		
				Steel corrosion (0.75)		

Custom Soil Resource Report

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Frost action (0.50)		
				Hillslope position (0.25)		
715A	Arrowsmith silt loam, 0 to 2 percent slopes	Very limited	Arrowsmith (91%)	Frost action (1.00)	3.9	6.5%
				Low strength (0.99)		
				Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Hillslope position (0.25)		
			Sable (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Shrink-swell (0.76)		
			Hartsburg, drained (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
			Spaulding, drained (2%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
				Steel corrosion (0.75)		
3451A	Lawson silt loam, 0 to 2 percent slopes, frequently	Very limited	Lawson, frequently flooded (95%)	Frost action (1.00)	17.5	29.1%
				Flooding (1.00)		

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Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	flooded, brief duration			Steel corrosion (0.75)		
				Depth to saturated zone (0.75)		
				Low strength (0.65)		
			Sawmill, frequently flooded (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Flooding (1.00)		
				Low strength (1.00)		
Totals for Area of Interest					60.0	100.0%

Rating	Acres in AOI	Percent of AOI
Very limited	59.8	99.6%
Somewhat limited	0.2	0.4%
Totals for Area of Interest	60.0	100.0%

Rating Options—Solar Arrays, Soil-based Anchor Systems

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Land Classifications

This folder contains a collection of tabular reports that present a variety of soil groupings. The reports (tables) include all selected map units and components for each map unit. Land classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Soil List - All Components

This table lists the map unit components and their hydric status in the survey area. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site (National Research Council, 1995; Hurt and others, 2002).

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties

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that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

Hydric soils are identified by examining and describing the soil to a depth of about 20 inches. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2). Definitions for the codes are as follows:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - B. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
 - A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - B. Show evidence that the soil meets the definition of a hydric soil;
4. Map unit components that are frequently flooded for long duration or very long duration during the growing season that:
 - A. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
 - B. Show evidence that the soil meets the definition of a hydric soil;

Hydric Condition: Food Security Act information regarding the ability to grow a commodity crop without removing woody vegetation or manipulating hydrology.

References:

- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. Doc. 2012-4733 Filed 2-28-12. February, 28, 2012. Hydric soils of the United States.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

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- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.
- Vasilas, L.M., G.W. Hurt, and C.V. Noble, editors. Version 7.0, 2010. Field indicators of hydric soils in the United States.

Report—Hydric Soil List - All Components

Hydric Soil List - All Components—IL105-Livingston County, Illinois					
Map symbol and map unit name	Component/Local Phase	Comp. pct.	Landform	Hydric status	Hydric criteria met (code)
69A: Milford silty clay loam, 0 to 2 percent slopes	Milford-Drained	88-100	Depressions on lake plains	Yes	2
	Peotone-Drained	0-9	Depressions	Yes	2
	Urban land	0-2	—	No	—
	Orthents, clayey	0-3	Ground moraines,lake plains	No	—
91A: Swygert silty clay loam, 0 to 2 percent slopes	Swygert	95-100	End moraines,ground moraines,till plains	No	—
	Bryce-Drained	0-5	Ground moraines,end moraines	Yes	2
91B2: Swygert silty clay loam, 2 to 4 percent slopes, eroded	Swygert-Eroded	95-100	Ground moraines,end moraines	No	—
	Bryce-Drained	0-5	End moraines,ground moraines	Yes	2
235A: Bryce silty clay, 0 to 2 percent slopes	Bryce-Drained	88-100	Ground moraines,glacial lakes (relict),till-floored lake plains	Yes	2
	Orthents, clayey	0-3	Ground moraines,lake plains	No	—
	Rantoul-Drained	0-9	Depressions on till-floored lake plains	Yes	2,3
	Urban land	0-3	Ground moraines	No	—
244A: Hartsburg silty clay loam, 0 to 2 percent slopes	Hartsburg	85-100	Flats on ground moraines	Yes	2
	Drummer	0-10	Swales	Yes	2
	Harpster	0-5	Depressions	Yes	2
448B2: Mona silt loam, 2 to 5 percent slopes, eroded	Mona	90-100	Ground moraines	No	—
	Bryce	0-9	Glacial lakes (relict),ground moraines	Yes	2
715A: Arrowsmith silt loam, 0 to 2 percent slopes	Arrowsmith	88-100	Ground moraines	No	—
	Sable	0-5	Swales	Yes	2
	Hartsburg-Drained	0-9	Ground moraines,flats	Yes	2
	Spaulding-Drained	0-5	Swales	Yes	2
3451A: Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	Lawson-Frequently flooded	91-100	Flood plains	No	—
	Sawmill-Frequently flooded	0-9	Flood plains	Yes	2

NCCPI Overall

National Commodity Crop Productivity Index is a method of arraying the soils of the United States for non-irrigated commodity crop production based on their inherent soil properties. The rating a soil is assigned is the highest one of four basic crop group indices, which are based on the climate where the crop is typically grown. Cooler climates are represented by winter wheat, moderate climates are represented by corn and, new for this version, a separate soybeans model, and warmer climates are represented by cotton.

The interpretation is applicable to both heavily populated and sparsely populated areas. Ratings are for soils in their present condition. The present land use is not considered in the ratings.

Ratings are based on properties and qualities to the depth normally observed during soil mapping (approximately 6 feet). Soil, site, and climate properties that influence the growth of crops are major considerations. Soil productivity is influenced by many soil properties. An ideal soil will store adequate amounts of water to nurture the crop between rains. This soil will have a near-neutral pH, will store nutrients, and lack toxic materials. The soil will have no barriers, either physical or chemical, to root growth. Water and gas transmission through the soil will be sufficient to maintain both water and oxygen at sufficient levels in the root zone. The soil will not be saturated with water during the growing season to the point that root growth is inhibited. The soil will not be subject to excessive flooding or ponding during the growing season. Slope is an important consideration because it affects erosion by water, runoff, and the operation of equipment. The climate must provide adequate water and heat to allow the desired crop to mature. A soil that differs from the ideal in any of these features will have lower inherent productivity for a particular crop. The further a soil differs from ideality in any one or all of the factors that determine inherent productivity, the lower its inherent productivity will be.

The ratings are both verbal and numerical. Rating class terms indicate the estimated productivity which is determined by all of the soil, site, and climatic features that affect crop productivity. "High inherent productivity" indicates that the soil, site, and climate have features that are very favorable for crop production. High yields and low risk of crop failure can be expected if a high level of management is employed. "Moderately high inherent productivity" indicates that the soil has features that are generally quite favorable crop production. Good yields and moderately low risk of crop failure can be expected. "Moderate inherent productivity" indicates that the soil has features that are generally favorable crop production. Good yields and moderate risk of crop failure can be expected. "Moderately low inherent productivity" indicates that the soil has features that are generally not favorable crop production. Low yields and moderately high risk of crop failure can be expected. "Low inherent productivity" indicates that the soil has one or more features that are unfavorable for crop production. Low yields and high risk of crop failure can be expected.

Numerical ratings indicate the overall productivity of the soil. The ratings are shown in decimal fractions ranging from 1.00 to 0.01. They indicate gradations between the point at which the combination of soil, site, and climate features has the greatest positive impact on inherent productivity (1.00) and the point at which the soil features are very unfavorable (0.01).

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

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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. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Report—NCCPI Overall

“National Commodity Crop Productivity Index” is a method of arraying the soils of the United States for non-irrigated commodity crop production based on their inherent soil properties. The interpretation is applicable to both heavily populated and sparsely populated areas. Ratings are for soils in their present condition. The present land use is not considered in the ratings.

NCCPI Overall—Livingston County, Illinois			
Map symbol and soil name	Pct. of map unit	NCCPI	
		Rating class and limiting features	Value
69A—Milford silty clay loam, 0 to 2 percent slopes			
Milford, drained	93	Moderately high inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Small grains	0.64
		Soybeans	0.65
		Corn	0.67
91A—Swygert silty clay loam, 0 to 2 percent slopes			
Swygert	98	Moderately high inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Small grains	0.56
		Soybeans	0.58
		Corn	0.63

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NCCPI Overall—Livingston County, Illinois			
Map symbol and soil name	Pct. of map unit	NCCPI	
		Rating class and limiting features	Value
91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded			
Swygert, eroded	98	Moderate inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Soybeans	0.45
		Small grains	0.50
		Corn	0.58
235A—Bryce silty clay, 0 to 2 percent slopes			
Bryce, drained	95	Moderate inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Soybeans	0.34
		Corn	0.45
		Small grains	0.56
244A—Hartsburg silty clay loam, 0 to 2 percent slopes			
Hartsburg	95	High inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Small grains	0.57
		Corn	0.73
		Soybeans	0.81
448B2—Mona silt loam, 2 to 5 percent slopes, eroded			
Mona	95	Moderately high inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Soybeans	0.42
		Small grains	0.53
		Corn	0.63
715A—Arrowsmith silt loam, 0 to 2 percent slopes			
Arrowsmith	91	High inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Small grains	0.70
		Corn	0.79
		Soybeans	0.91

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NCCPI Overall—Livingston County, Illinois			
Map symbol and soil name	Pct. of map unit	NCCPI	
		Rating class and limiting features	Value
3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration			
Lawson, frequently flooded	95	High inherent productivity	
		No limitation	0.00
		Cotton	0.01
		Small grains	0.57
		Corn	0.78
		Soybeans	0.83

Prime and other Important Farmlands

This table lists the map units in the survey area that are considered important farmlands. Important farmlands consist of prime farmland, unique farmland, and farmland of statewide or local importance. This list does not constitute a recommendation for a particular land use.

In an effort to identify the extent and location of important farmlands, the Natural Resources Conservation Service, in cooperation with other interested Federal, State, and local government organizations, has inventoried land that can be used for the production of the Nation's food supply.

Prime farmland is of major importance in meeting the Nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied. In general, prime farmland has an adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods, and it either is not frequently flooded during the growing season or is protected from flooding. Slope ranges mainly from 0 to 6 percent. More detailed information about the criteria for prime farmland is available at the local office of the Natural Resources Conservation Service.

For some of the soils identified in the table as prime farmland, measures that overcome a hazard or limitation, such as flooding, wetness, and droughtiness, are needed. Onsite evaluation is needed to determine whether or not the hazard or limitation has been overcome by corrective measures.

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A recent trend in land use in some areas has been the loss of some prime farmland to industrial and urban uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, and less productive and cannot be easily cultivated.

Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has the special combination of soil quality, growing season, moisture supply, temperature, humidity, air drainage, elevation, and aspect needed for the soil to economically produce sustainable high yields of these crops when properly managed. The water supply is dependable and of adequate quality. Nearness to markets is an additional consideration. Unique farmland is not based on national criteria. It commonly is in areas where there is a special microclimate, such as the wine country in California.

In some areas, land that does not meet the criteria for prime or unique farmland is considered to be *farmland of statewide importance* for the production of food, feed, fiber, forage, and oilseed crops. The criteria for defining and delineating farmland of statewide importance are determined by the appropriate State agencies. Generally, this land includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some areas may produce as high a yield as prime farmland if conditions are favorable. Farmland of statewide importance may include tracts of land that have been designated for agriculture by State law.

In some areas that are not identified as having national or statewide importance, land is considered to be *farmland of local importance* for the production of food, feed, fiber, forage, and oilseed crops. This farmland is identified by the appropriate local agencies. Farmland of local importance may include tracts of land that have been designated for agriculture by local ordinance.

Report—Prime and other Important Farmlands

Prime and other Important Farmlands—Livingston County, Illinois		
Map Symbol	Map Unit Name	Farmland Classification
69A	Milford silty clay loam, 0 to 2 percent slopes	Prime farmland if drained
91A	Swygert silty clay loam, 0 to 2 percent slopes	All areas are prime farmland
91B2	Swygert silty clay loam, 2 to 4 percent slopes, eroded	All areas are prime farmland
235A	Bryce silty clay, 0 to 2 percent slopes	Prime farmland if drained
244A	Hartsburg silty clay loam, 0 to 2 percent slopes	Prime farmland if drained
448B2	Mona silt loam, 2 to 5 percent slopes, eroded	All areas are prime farmland
715A	Arrowsmith silt loam, 0 to 2 percent slopes	All areas are prime farmland
3451A	Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	Prime farmland if protected from flooding or not frequently flooded during the growing season

Soil Erosion

This folder contains a collection of tabular reports that present soil erosion factors and groupings. The reports (tables) include all selected map units and components for each map unit. Soil erosion factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

Conservation Planning

This report provides those soil attributes for the conservation plan for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. It provides the soil description along with the slope, runoff, T Factor, WEI, WEG, Erosion class, Drainage class, Land Capability Classification, and the engineering Hydrologic Group and the erosion factors Kf, the representative percentage of fragments, sand, silt, and clay in the mineral surface horizon. Missing surface data may indicate the presence of an organic surface layer. Further information on these factors can be found in the National Soil Survey Handbook section 618 found at the url http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcs142p2_054223#00 .

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Soil properties and interpretations for conservation planning. The surface mineral horizon properties are displayed. Organic surface horizons are not displayed.

Conservation Planning—Livingston County, Illinois																	
Map symbol and soil name	Pct. of map unit	Slope RV	USLE Slope Length ft.	Runoff	T Factor	WEI	WEG	Erosion	Drainage	NIRR LCC	Hydro logic Group	Surface					
												Depths in.	Kf Factor	Frag-ments RV	Sand RV	Silt RV	Clay RV
69A—Milford silty clay loam, 0 to 2 percent slopes																	
Milford, drained	93	0.5	150	Negligible	5	86	4	None - deposition	Poorly drained	2w	C/D	0 - 9	.24	1	13	50	37
91A—Swygert silty clay loam, 0 to 2 percent slopes																	
Swygert	98	0.9	150	Medium	4	48	6	Class 1	Somewhat poorly drained	2w	C/D	0 - 11	.24	1	8	60	32
91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded																	
Swygert, eroded	98	3.0	200	High	4	48	6	Class 2	Somewhat poorly drained	2e	C/D	0 - 7	.28	1	8	58	34
235A—Bryce silty clay, 0 to 2 percent slopes																	
Bryce, drained	95	0.5	150	Negligible	5	86	4	None - deposition	Poorly drained	3w	C/D	0 - 12	.17	0	5	50	45
244A—Hartsburg silty clay loam, 0 to 2 percent slopes																	
Hartsburg	95	0.5	400	Negligible	5	48	6	Class 1	Poorly drained	2w	B/D	0 - 16	.28	—	4	64	31
448B2—Mona silt loam, 2 to 5 percent slopes, eroded																	
Mona	95	4.0	200	Medium	3	48	6	Class 2	Moderately well drained	2e	C	0 - 9	.28	2	20	55	24

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Conservation Planning—Livingston County, Illinois																	
Map symbol and soil name	Pct. of map unit	Slope RV	USLE Slope Length ft.	Runoff	T Factor	WEI	WEG	Erosion	Drainage	NIRR LCC	Hydro logic Group	Surface					
												Depths in.	Kf Factor	Frag-ments RV	Sand RV	Silt RV	Clay RV
715A—Arrowsmith silt loam, 0 to 2 percent slopes																	
Arrowsmith	91	1.0	298	Low	5	48	6	Class 1	Somewhat poorly drained	—	B/D	0 - 12	.37	0	5	71	24
3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration																	
Lawson, frequently flooded	95	0.9	249	Negligible	5	48	6	None - deposition	Somewhat poorly drained	3w	B/D	0 - 14	.32	0	7	72	21

Vegetative Productivity

This folder contains a collection of tabular reports that present vegetative productivity data. The reports (tables) include all selected map units and components for each map unit. Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Illinois NRCS Adjusted Yield Indices by Map Unit (IL)

Map Unit Productivity and Yield Indices that have been Adjusted for Slope, Erosion, and Flooding

Summary

In Illinois, USDA Natural Resources Conservation Service (NRCS) uses the base productivity index (PI) and base yield indices for corn, soybeans, winter wheat, oats, grain sorghum, and grass-legume hay from University of Illinois (UI) Bulletin 811 "Optimum Crop Productivity Ratings for Illinois Soils" (Olson and Lang, 2000) with revised data from "Table S2, Revised—Productivity of Illinois Soils Under Optimum Management, Slightly Eroded, 0 to 2 Percent Slopes" (Olson and Lang, 2012). NRCS uses base indices for grass-legume pasture from UI Bulletin 810 "Average Crop, Pasture, and Forestry Productivity Ratings for Illinois Soils" (Olson, et al. 2000) with revised data from "Table 2 revised—Productivity of Illinois Soils Under Average Management, Slightly Eroded, 0 to 2 Percent Slopes" (Olson et al., 2012). The base indices are used for conservation planning and policy after adjusting for major-component percentage of the soil mapping units and for phase, including slope, erosion, and flooding.

NRCS developed calculations for the Web Soil Survey based on the indices from the University of Illinois. Previously, yields and indices were populated manually in the National Soil Information System (NASIS). They were then delivered through the Web Soil Survey, the digital soil survey geographic database (SSURGO), and published soil survey reports for individual counties. Manually editing the NASIS database to account for updates to the productivity and base index from UI generated a significant workload. Edits were needed for the 7 indexed crops in more than 10,000 soil map units in Illinois.

Soil Database Composition

A soil series represents the central, characteristic concepts of a soil. Soil map units are identified as phases of soil series based on variations in slope, erosion, flooding, surface texture, substratum (layers below the developed soil profile), drainage, or other specifically identified properties. Consociations are map units containing one major-component soil series that makes up at least 85 percent of that map unit. Complexes and undifferentiated groups are map units that contain

more than one major-component soil series. Additional map units are composed of miscellaneous soil areas or materials that are not represented by standard soil series concepts. Examples of miscellaneous areas include urban land, dams, beaches, dumps, oil-waste land, pits, riverwash, rock outcrop, water, and miscellaneous water. Certain types of soil materials that are identified on a soil map do not typically have interpretations because of high variability (Soil Survey Division Staff, 1993). Examples include Orthents of several kinds, Alfic Udarents, and Aquents.

Indices for consociations are calculated by representing the major component as 100 percent of the whole map unit. Complexes and undifferentiated groups are developed by ignoring minor component percentages and re-calculating the major components to equal 100 percent of the map unit. These methods allow the major components in complexes and undifferentiated groups to proportionately dominate productivity and yield indices. If a miscellaneous area is included in a map unit as a component, it carries a value of zero in subsequent calculations, significantly impacting the map unit index.

Yield indices and productivity indices for row crops are not calculated for agricultural purposes where land capability classification (LCC) of the map unit is 6s, 6e, 7e, 8, or 8s or where the map unit component is identified as "Taxon above family" or "Miscellaneous area." Grass-legume hay indices are not calculated where LCC is 7s, 7e, or 8. Grass-legume pasture indices are not calculated where LCC is 8 or 8s.

These indices are not used for real estate land assessment or for valuation of real estate tax base in Illinois.

Yield indices in Illinois have been adjusted by NRCS for several years on the basis of slope, erosion, and flooding. Additional factors may be needed to address differences among specific sites or series phases. Yields and productivity indices given in the table are generally accurate, but local variability and slight differences in soil characteristics still exist across the landscape. Some soils are more variable than others, and some soils respond differently to management. Variations in landform and in landform position also affect soil moisture and nutrient availability and consequently affect yield.

Yield indices are determined for nonirrigated land under normal management, including drainage for agricultural purposes where appropriate. Soils that are typically drained under normal management but have not been drained will have lower yield indices than given in the table. Soils under irrigation management will have higher yield indices than given in the table.

The calculated yield indices are relative to one another and the base yields of UI bulletins 810 and 811. The indices are intended for ranking, comparing, and estimating yields and productivity of crops typically grown on the named soil series.

University of Illinois Bulletin 811 (Olsen and Lang, 2012) provides index factors for determining RV optimum productivity index and optimum yield indices for row crops and hay. The calculated indices reflect soil productivity for crops and hay under dominantly optimum management.

University of Illinois Bulletin 810 (Olsen et al., 2012) provides base yield index factors for calculating representative values (RV) for soil map units. The resulting values for average productivity index and average pasture yield index reflect the overall productivity and productivity for pasture under average management for each soil map unit.

Hay and pasture yields are delivered as grass-legume mixed hay and grass-legume mixed pasture. Well drained soils typically use alfalfa yields. Vegetation is more

mixed on wetter soils where alfalfa is not grown. Dominantly, both hayland and pasture support mixed grasses and legumes.

Factors used for slope and erosion are applied as defined by bulletin 810 and 811. In Illinois, NRCS uses relative value (Rv) slope, assigned erosion class, and a simple table to determine which value (from table S3 in bulletin 811) to use for row crops and hay. Table 7 in bulletin 810 is used with the Rv slope and assigned erosion to determine the number of animal unit days, which is then divided by 30 to get animal unit months.

Productivity indices derived with this method have been incorporated with the statewide Land Evaluation and Site Assessment (LESA) system for the protection of farmland relative to The Illinois Farmland Preservation Act, 1982 (505 ILCS 75/1 et seq.), in which the Illinois Department of Agriculture (IDA) was legislatively directed to review all State agency projects and activities that may have a direct or indirect effect upon the potential conversion of farmland in Illinois (IDA, 2001; CCRPC, 2011).

Productivity indices derived with this method have been incorporated with the Federal Farmland Protection Policy Act (FPPA), 1981, which directs all Federal agencies to evaluate their programs and projects and to modify their actions so as to produce the least impact on farmland. The FPPA also seeks to ensure that Federal programs are administered in a manner that, to the extent practicable, will be compatible with State and local government programs, private programs, and policies to protect farmland. Additional information on the FPPA is online at <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/>.

Further documentation regarding the indices, including information on how they were derived, is available from the University of Illinois soil productivity website at <http://soilproductivity.nres.uiuc.edu/> (Olson and Lang, 2000, 2012; Olson, et al. 2000, 2012). Other information regarding the Illinois productivity and yield indices can be found on the Illinois Field Office Technical Guide (FOTG). Select Illinois from the map at <http://efotg.sc.egov.usda.gov/>; select a county of interest from the next map; select "Section II" from the drop-down menu on the left; select "Soil and Site Information;" select "Productivity and Yield Indices;" and select a document of interest.

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Report—Illinois NRCS Adjusted Yield Indices by Map Unit (IL)

[This table arrays soils in Illinois for nonirrigated commodity crop production based on their inherent soil properties. Ratings are for soils in their present condition. Absence of an entry indicates that a crop productivity index is not assigned. These estimates are factored for slope, erosion, and flooding.]

Illinois NRCS Adjusted Yield Indices by Map Unit (IL) –Livingston County, Illinois							
Map symbol and name	Corn	Soybeans	Wheat	Oats	Sorghum	Hay	Pasture
	Bu	Bu	Bu	Bu	Bu	Tons	AUM
3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration	171	55	66	87	—	5.2	6.9
91A—Swygert silty clay loam, 0 to 2 percent slopes	158	52	63	79	—	4.5	6.0
244A—Hartsburg silty clay loam, 0 to 2 percent slopes	182	59	68	89	—	5.4	7.2
235A—Bryce silty clay, 0 to 2 percent slopes	162	54	64	82	—	4.8	6.3
715A—Arrowsmith silt loam, 0 to 2 percent slopes	190	61	74	97	—	5.7	—
91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded	147	48	59	73	—	4.2	5.5
69A—Milford silty clay loam, 0 to 2 percent slopes	171	57	68	88	—	5.5	7.3
448B2—Mona silt loam, 2 to 5 percent slopes, eroded	152	48	59	78	—	4.0	5.4

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

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Hydrologic Soil Group and Surface Runoff—Livingston County, Illinois			
Map symbol and soil name	Pct. of map unit	Surface Runoff	Hydrologic Soil Group
69A—Milford silty clay loam, 0 to 2 percent slopes			
Milford, drained	93	Negligible	C/D
91A—Swygert silty clay loam, 0 to 2 percent slopes			
Swygert	98	Medium	C/D
91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded			
Swygert, eroded	98	High	C/D
235A—Bryce silty clay, 0 to 2 percent slopes			
Bryce, drained	95	Negligible	C/D
244A—Hartsburg silty clay loam, 0 to 2 percent slopes			
Hartsburg	95	Negligible	B/D
448B2—Mona silt loam, 2 to 5 percent slopes, eroded			
Mona	95	Medium	C
715A—Arrowsmith silt loam, 0 to 2 percent slopes			
Arrowsmith	91	Low	B/D
3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration			
Lawson, frequently flooded	95	Negligible	B/D

Water Features

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell

potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water table refers to a saturated zone in the soil. The water features table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table. The kind of water table, apparent or perched, is given if a seasonal high water table exists in the soil. A water table is perched if free water is restricted from moving downward in the soil by a restrictive feature, in most cases a hardpan; there is a dry layer of soil underneath a wet layer. A water table is apparent if free water is present in all horizons from its upper boundary to below 2 meters or to the depth of observation. The water table kind listed is for the first major component in the map unit.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance

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of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

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Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
69A—Milford silty clay loam, 0 to 2 percent slopes											
Milford, drained	C/D	Negligible	Jan-May	0.0-1.0	6.0	Apparent	0.0-0.5	Brief (2 to 7 days)	Frequent	—	None
			Jun-Dec	—	—	—	—	—	—	—	None
91A—Swygert silty clay loam, 0 to 2 percent slopes											
Swygert	C/D	Medium	Jan-May	1.0-2.0	2.9-4.8	Perched	—	—	None	—	None
			Jun-Dec	—	—	—	—	—	None	—	None
91B2—Swygert silty clay loam, 2 to 4 percent slopes, eroded											
Swygert, eroded	C/D	High	Jan-May	1.0-2.0	2.9-4.8	Perched	—	—	None	—	None
			Jun-Dec	—	—	—	—	—	None	—	None
235A—Bryce silty clay, 0 to 2 percent slopes											
Bryce, drained	C/D	Negligible	Jan-May	0.0-1.0	6.0	Apparent	0.0-0.5	Brief (2 to 7 days)	Frequent	—	None
			Jun-Dec	—	—	—	—	—	—	—	None
244A—Hartsburg silty clay loam, 0 to 2 percent slopes											
Hartsburg	B/D	Negligible	Jan-May	0.0-1.0	6.0	Apparent	0.0-0.5	Brief (2 to 7 days)	Frequent	—	None
			Jun-Dec	—	—	—	—	—	None	—	None
448B2—Mona silt loam, 2 to 5 percent slopes, eroded											
Mona	C	Medium	Jan	—	—	—	—	—	None	—	None
			Feb-Apr	2.0-3.5	2.5-5.0	Perched	—	—	None	—	None
			May-Dec	—	—	—	—	—	None	—	None
715A—Arrowsmith silt loam, 0 to 2 percent slopes											
Arrowsmith	B/D	Low	Jan-May	1.0-2.0	6.0	Apparent	—	—	None	—	None
			Jun-Dec	—	—	—	—	—	None	—	None

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Map unit symbol and soil name	Hydrologic group	Surface runoff	Most likely months	Water table			Ponding			Flooding	
				Upper limit	Lower limit	Kind	Surface depth	Duration	Frequency	Duration	Frequency
				<i>Ft</i>	<i>Ft</i>		<i>Ft</i>				
3451A—Lawson silt loam, 0 to 2 percent slopes, frequently flooded, brief duration											
Lawson, frequently flooded	B/D	Negligible	Jan-May	1.0-2.0	6.0	Apparent	—	—	None	Brief (2 to 7 days)	Frequent
			Jun	—	—	—	—	—	None	Brief (2 to 7 days)	Frequent
			Jul-Oct	—	—	—	—	—	None	—	None
			Nov-Dec	—	—	—	—	—	None	Brief (2 to 7 days)	Frequent

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