Kane-DuPage Soil & Water Conservation District

NATURAL RESOURCES INVENTORY

25-098

December 12, 2025

Prepared for:
Kane County Development Department

Petitioner:
USS Rhea Solar LLC
233 S. Wacker Dr.
Chicago, IL 60606

TABLE OF CONTENTS

PURPOSE AND INTENT 3
EXECUTIVE SUMMARY 4
PARCEL LOCATION 7
LAND COVER IN THE EARLY 1800'S 8
GREEN INFRASTRUCTURE 9
NATIONAL WETLAND INVENTORY (NWI) 10
ADVANCED IDENTIFICATION OF WETLANDS (ADID) 11
FLOODPLAINS 12
WATERSHEDS AND STREAMS 13
WATERSHEDS AND SUBWATERSHEDS 14
AQUIFER SENSITIVITY 15
TOPOGRAPHY AND OVERLAND FLOW 16
STORMWATER MANAGEMENT 17
SOIL EROSION 17
HIGHLY ERODIBLE LAND (HEL) 18
SOILS & SOIL INTERPRETATIONS 19
SOIL SURVEY 20
SOIL MAP UNIT DESCRIPTIONS 21
SOIL INTERPRETATIONS – SHALLOW EXCAVATIONS 22
SOIL INTERPRETATIONS – LOCAL ROADS AND STREETS 23
SOIL INTERPRETATIONS – SOLAR ARRAYS, SOIL-BASED ANCHORING SYSTEMS 24
WATER TABLE 25
HYDRIC SOILS 26
PRIME FARMLAND – LAND EVALUATION & SITE ASSESSMENT 27
REGULATORY INFORMATION 28
REGULATORY AGENCIES 28
CONTACTS 29
REFERENCES 30
SITE INSPECTION 31
SITE INSPECTION PHOTOS 32

TABLE OF FIGURES

FIGURE 1: PLAT MAP WITH AERIAL BACKGROUND AND PARCEL BOUNDARY 7
FIGURE 2: LAND COVER OF ILLINOIS IN THE EARLY 1800'S 8
FIGURE 3: KANE COUNTY 2040 GREEN INFRASTRUCTURE PLAN SITE MAP..... 9
FIGURE 4: NATIONAL WETLAND INVENTORY (NWI) MAP..... 10
FIGURE 5: ADVANCED IDENTIFICATION OF WETLANDS (ADID), KANE COUNTY 11
FIGURE 6: FLOODPLAIN MAP - FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) 12
FIGURE 7: WATERSHEDS AND SUBWATERSHEDS MAP..... 14
FIGURE 8: AQUIFER SENSITIVITY TO CONTAMINATION MAP 15
FIGURE 9: TOPOGRAPHIC MAP SHOWING CONTOUR LINES 16
FIGURE 10: HIGHLY ERODIBLE LAND MAP 18
FIGURE 11: SOIL SURVEY 20
FIGURE 12: SOIL INTERPRETATIONS FOR SHALLOW EXCAVATIONS 22
FIGURE 13: SOIL INTERPRETATIONS FOR LOCAL ROADS AND STREETS 23
FIGURE 14: SOIL INTERPRETATIONS FOR SOLAR ARRAYS, SOIL-BASED ANCHORING SYSTEMS..... 24
FIGURE 15: MAP SHOWING THE DEPTH TO A SEASONAL HIGH-WATER TABLE 25
FIGURE 16: HYDRIC SOILS MAP 26
FIGURE 17: PRIME FARMLAND MAP 27
FIGURE 18: LOCATION OF SITE INSPECTION PHOTOS 31

PURPOSE AND INTENT

This Natural Resources Inventory is intended to present the most current natural resource information available for a parcel, lot, or tract of land in an understandable format. It contains a description of the present conditions and resources available and their potential impact on each other, especially regarding a proposed change to that parcel of land. This information comes from standardized data, investigations of the parcel, and other information furnished by the petitioner. **This report must be read in its entirety**, so that the relationship between natural resource factors and the proposed land use can be fully understood.

This report presents natural resource information to owners, land-managers, officials of local governing bodies, and other decision makers concerning the parcel. Decisions concerning variations, amendments, or relief of local zoning ordinances may reference this report. Also, decisions concerning the future of a proposed subdivision of vacant or agricultural lands, and the subsequent development of these lands may reference this report. This report is a requirement under the State of Illinois Soil and Water Conservation District Act contained in ILCS 70, 405/1 ET seq.

This report provides the best available natural resource information for the parcel and when used properly, will provide the basis for good land use change decisions and proper development while protecting the natural resource base of the county. However, because of the variability of nature, and because of the limitations of map scale and the precision of natural resource maps (which includes the property boundaries represented for the parcel), this report does not reflect precise natural resource information at specific locations within the parcel. On-site investigations, soil evaluations, and engineering studies should be conducted as necessary, for point-specific information.

This Natural Resources Inventory report is a review of the major natural resources of the site and a general estimate of the suitability of this site for the proposed use. Because of the small size of this parcel and because of the inherent probable errors in the precision of natural resource information at the scale of natural resource maps, the KDSWCD makes no opinion on the suitability of this site for the proposed use but may give general statements and an estimate of the possible effects of the land use change to the natural resources of this parcel. The information given in this report is based on the review of natural resource maps and literature by the Kane-DuPage Soil and Water Conservation District. The statements in this report are not meant as a recommendation for the success, nor the failure of, the proposed use of this parcel.

This report should alert the reader to the capabilities of the parcel and to the possible issues that may occur if the properties and characteristics of the land are ignored. Please direct technical questions about information supplied in this report to:

Kane-DuPage Soil & Water Conservation District
2315 Dean Street, Suite 100
St. Charles, IL 60175
Phone: (630) 584-7960 x3

EXECUTIVE SUMMARY
APPLICATION 25-098
December 12, 2025

Petitioner: USS Rhea Solar LLC, 233 S. Wacker Dr., Chicago, IL 60606

Contact Person: Elijah Mitchell, 312-623-4310

Unit of Government Responsible for Permits: Kane County

Acreage: 53

Area of Disturbance (acreage): 45

Location of Parcel: Virgil Township 40N, Range 6E, Section 26

Property Address/PIN#: #07-26-100-003, 3N202 - 3N451 Francis Rd., Maple Park, IL 6151

Existing Land Use: Agriculture

Proposed Land Use: Community Solar

NATURAL RESOURCE CONCERNS

Land Cover in the Early 1800's: This site is in an area previously identified as **Forest** (**page 8**).

Kane County Green Infrastructure Plan: This site is indicated as **an Environmental Resource Area (page 9**).

Wetlands: **The National Wetland Inventory map and the ADID Wetland Map do not** identify wetland areas on this site. If there are any indications of unidentified wetlands on this site, noticed during the proposed land use change, contact the appropriate county and federal wetland regulatory agencies (**pages 10-11**).

Floodplain: There are floodplain areas identified on this site (**page 12**).

Streams: There are **no** streams on this site (**page 13**).

Watersheds and Subwatersheds: The map above indicates that **100 percent** of this site is located within the boundaries of subwatershed **HUC12-070900060501 East Branch South Branch Kishwaukee River** of the **HUC10-0709000605 Kishwaukee River** watershed (**page 14**).

Aquifer Sensitivity: This site is classified as having a **Moderately High Potential** for aquifer contamination (**page 15**).

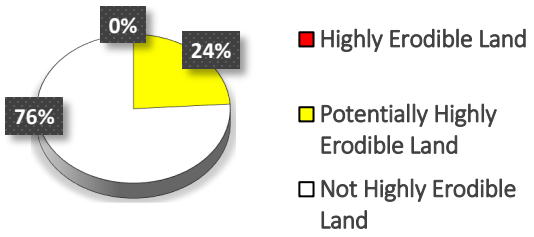
Topography and Overland Flow: The high point of this property is in the **Northeastern** portion of the site at an elevation of approximately **894 feet** above sea level. The property generally drains to the **South** via overland flow. The lowest elevation on the property is approximately **868 feet** above sea level (**page 16**).
Please Note: This site's actual topography does not match the map. The site has been materially altered after the topological map information was gathered and produced.

Stormwater Management: This site **may or may not** need a Stormwater Pollution Prevention Plan (SWPPP). Contact the KDSWCD for questions or assistance in developing a SWPPP (see **page 17**).

EXECUTIVE SUMMARY
APPLICATION 25-098
December 12, 2025

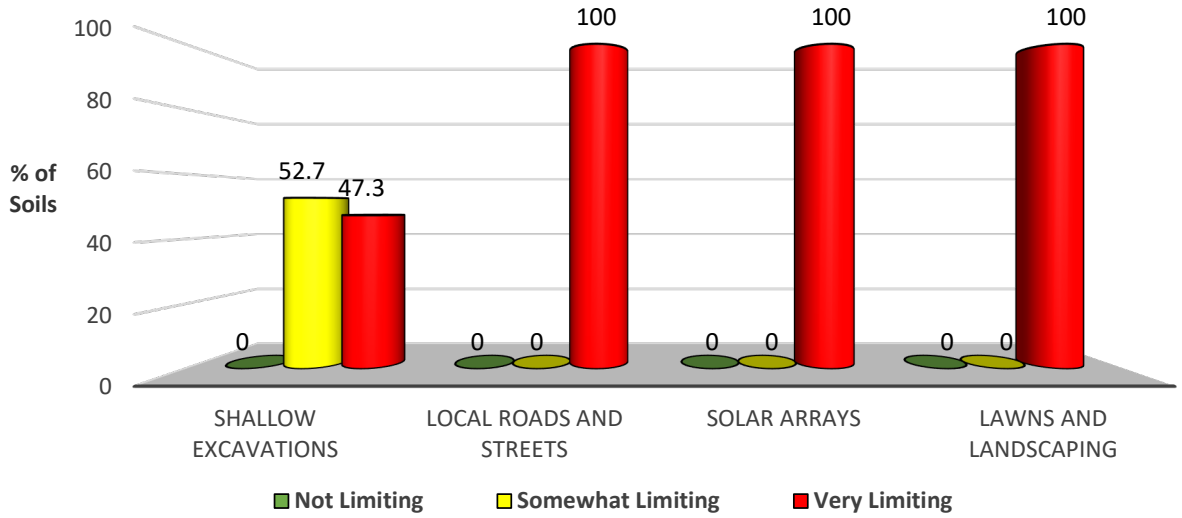
Soil Erosion: Many construction sites are required to develop and follow a Stormwater Pollution Prevention Plan (SWPPP) in order to be in compliance with local, state, and federal laws regarding soil erosion and stormwater management. Contact the KDSWCD for questions or assistance in developing a SWPPP (**page 17**).

Highly Erodible Land: There is **Highly or Potentially Highly Erodible Land** identified on this site (**page 18**).



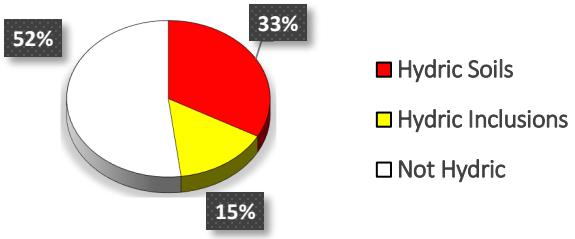
Regulations: Please note that additional permits are required for any development impacting wetlands, streams, or floodplain areas (**page 28**).

Soil Interpretations: Soils at this site may contain limitations for the proposed use. All information is from the Soil Survey of Kane County, Illinois. The limiting factors for this site are: **Ponding, Frost Action, Depth to Saturated Zone, Low Strength, Steel Corrosion, Shrink-swell, Flooding, and Slope** (**pages 19-24** and attached Soils Table on **page 21**).



Water Table: There is a seasonal high-water table at a depth of **0.49 to 6.59 feet** of the soil surface (**page 25**).

Hydric Soils: There are **Hydric Soils and Soils with Hydric Inclusions** identified on this site (**page 26**).



EXECUTIVE SUMMARY
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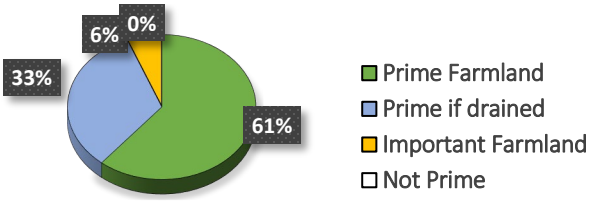
Prime Farmland: **Prime and Important Farmland are** found on this tract (**page 27**).



LESA: Sites with a LESA score of 85 or greater are considered to warrant protection. This site has an LE score of **30,** and a SA score of **49,** with a total score of **79,** placing it in the **Moderate Protection** category for farmland (**page 27**).

Land Planning and Development Concerns:

Based upon the LESA score and the Kane County Land Evaluation and Site Assessment, this tract warrants **Moderate Protection** effort from development.

PARCEL LOCATION

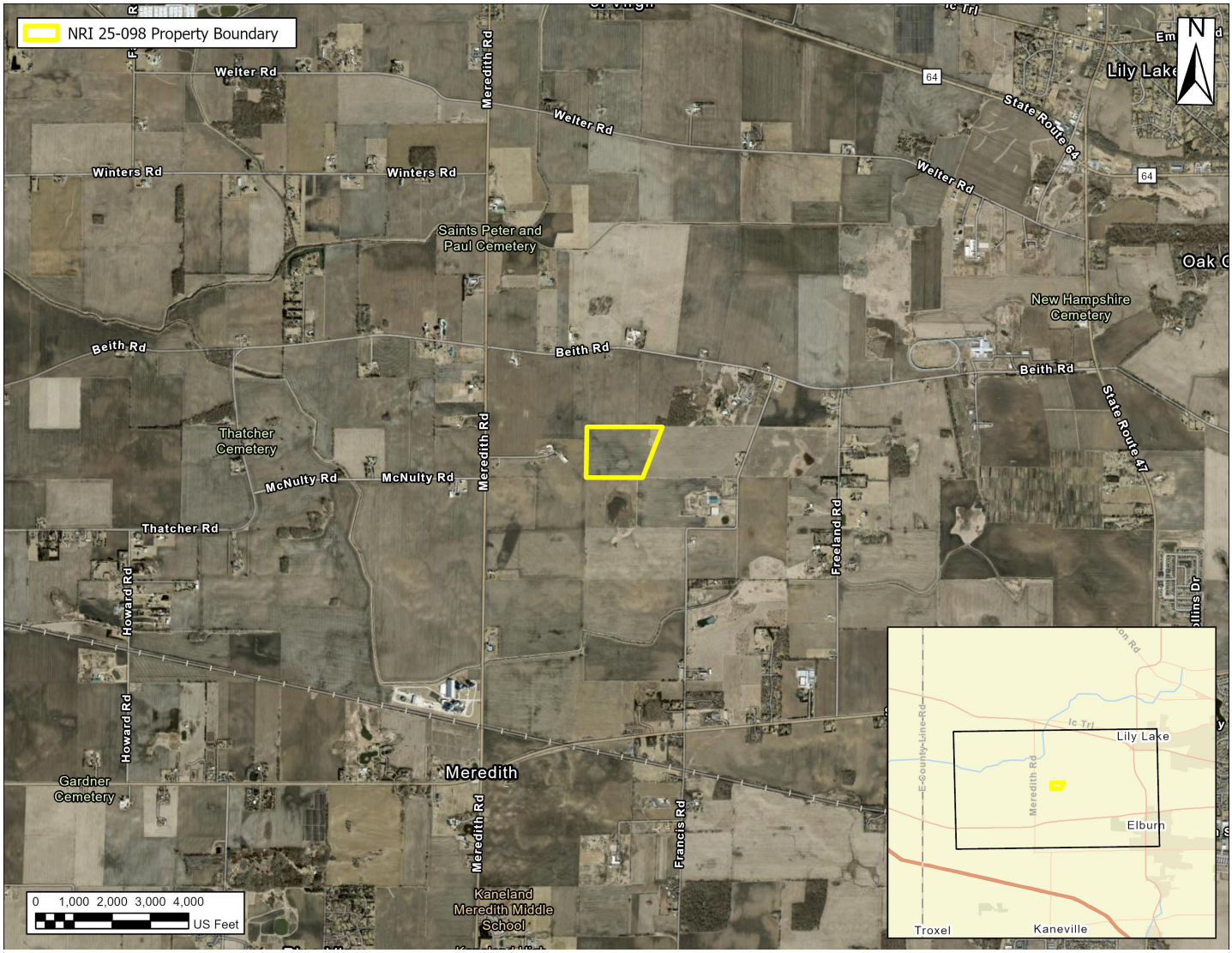


Figure 1: Plat Map with aerial background and parcel boundary

This site is in **Virgil Township**. The public land survey system identifies the site in **Section 26 in Township 40 North and Range 6 East.** The site is **Parcel #07-26-100-003** located **at 3N 202 - 3N 451 Francis Rd. in Maple Park, IL**.

LAND COVER IN THE EARLY 1800'S

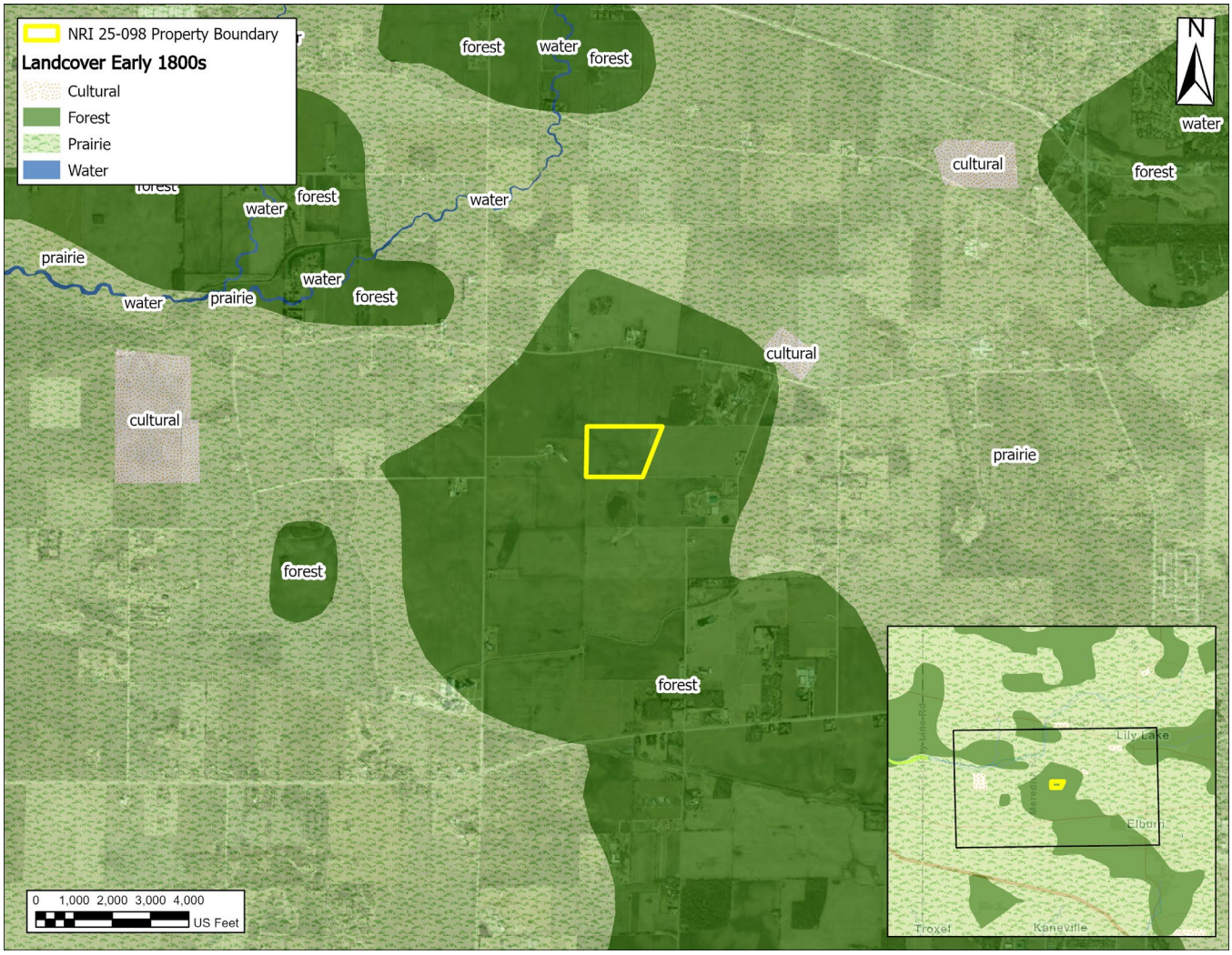


Figure 2: Land Cover of Illinois in the Early 1800's

The public land survey system represents one of the earliest detailed maps for Illinois. The surveys began in 1804 and were largely completed by 1843. The surveyors recorded the land cover and natural resource areas as they worked across the state. These plat maps and field notebooks contain a wealth of information about what the landscape was like before large numbers of settlers came into the state and began modifying the land.

Much of the landscape of Illinois in the early 1800's consisted of two different natural resource areas; prairie and forest. The forest category includes woodlands and savannas, typical of northeastern Illinois. Prairie and forest ecosystems are extremely valuable resources for many reasons. These areas:

- provide wildlife habitat and support biodiversity
- provide areas for recreational opportunities
- improve soil health and reduce soil loss
- improve air and water quality

The original 42 categories of natural resource areas were later simplified to 12 categories; barrens, bottomland, cultural (farms), forest, marsh, other wetlands, prairie, slough, swamp, special geographic features, wet prairie, and water. The maps do not represent exact site conditions, but represent the observations of individual surveyors as they crossed through the area.

This site is recorded as Forest land cover on the early 1800's map. The Kane-DuPage Soil & Water Conservation District recommends preserving as much of the natural character of the site as possible, using native plants for landscaping, and removing and controlling invasive species.

GREEN INFRASTRUCTURE

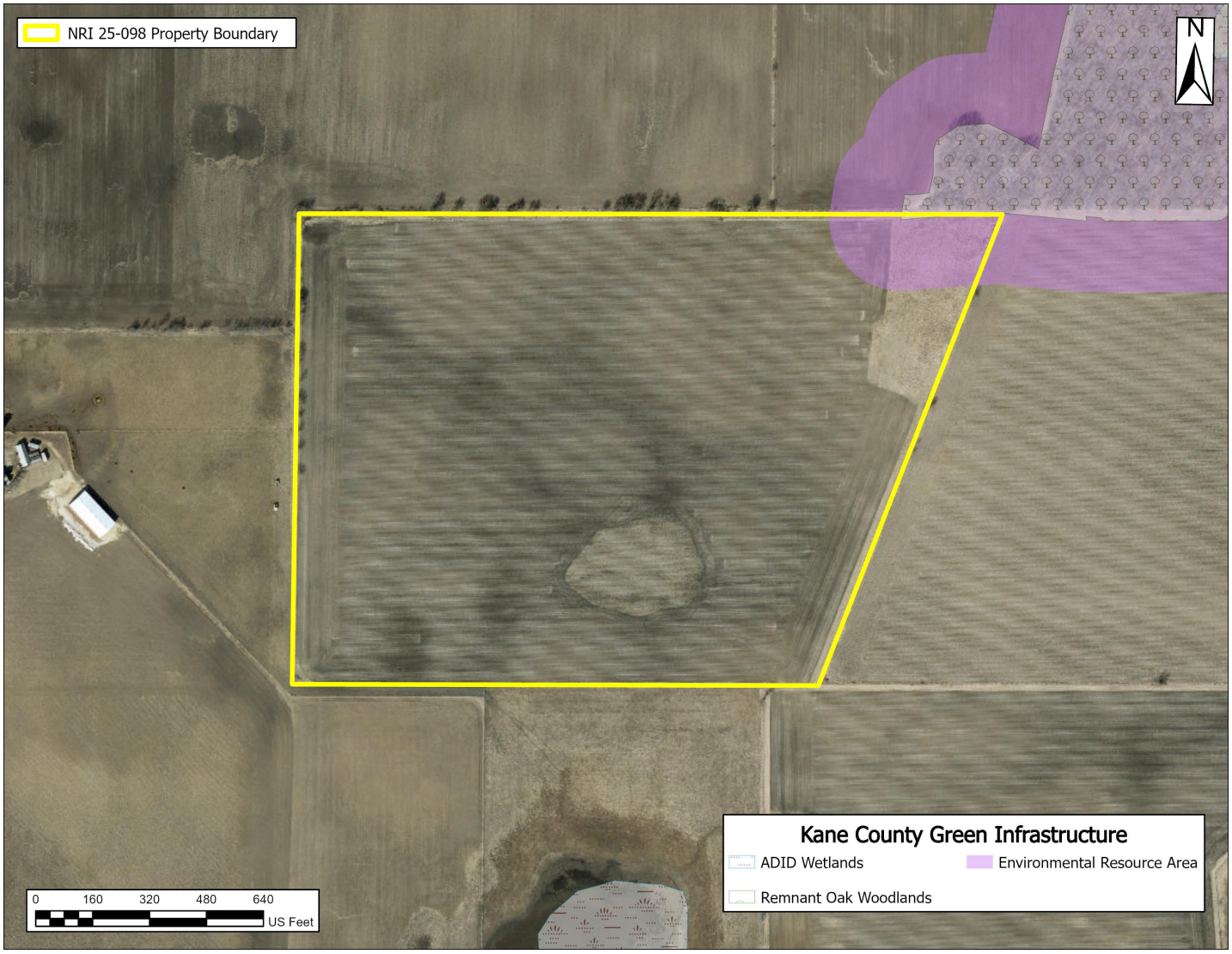


Figure 3: Kane County 2040 Green Infrastructure Plan site map

Green infrastructure is an interconnected system of natural areas and open spaces including woodlands, wetlands, trails, and parks, which are protected and managed for the ecological values and functions they provide to people and wildlife. The Kane County Green Infrastructure Plan includes analysis of existing natural resources in the county and recommend actions for green infrastructure priorities and approaches. The goal is to lay the groundwork for green infrastructure planning and projects at the regional, community, neighborhood, and site level, (from the "Kane County 2040 Green Infrastructure Plan").

The benefits of green infrastructure include:

- Preservation of habitat and diversity
- Water and soil conservation
- Flood storage and protection
- Improved public health
- Encourage local food production
- Economic benefits
- Mitigation and adaptation for climate change

This site includes the following priority in the "Kane County 2040 Green Infrastructure Plan": Environmental Resource Area.

NATIONAL WETLAND INVENTORY (NWI)

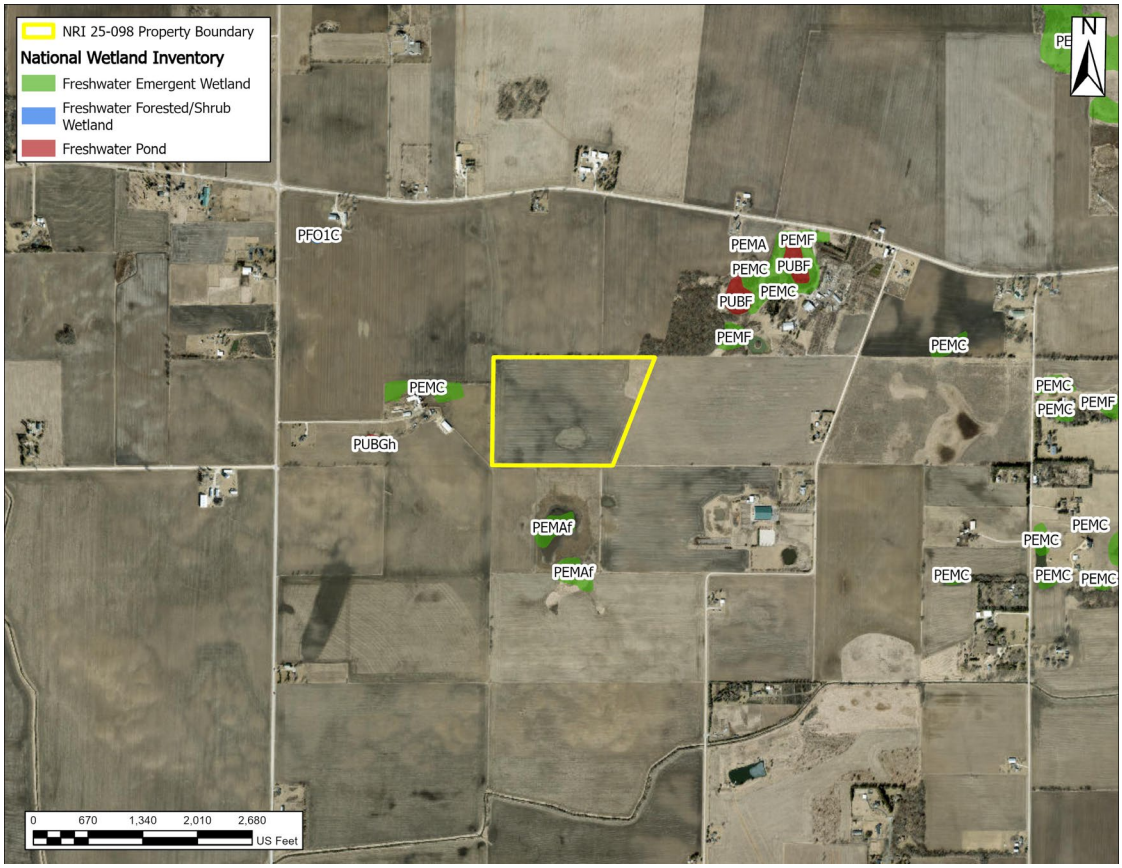


Figure 4: National Wetland Inventory (NWI) Map

The National Wetland Inventory (NWI), conducted by the U.S. Fish and Wildlife Service, identifies significant wetlands throughout the country. All U.S. federal agencies define wetlands as follows, "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." Other common wetlands located in this part of Illinois are fens, wet meadows, seasonally saturated soils, and farmed wetlands.

Wetlands are protected and regulated by federal, state, and local laws, without regard to size. Wetlands are valuable, productive, and diverse ecological systems and provide multiple benefits, including:

- controlling flooding by slowing the release of excess water downstream or through the soil,
- cleansing water by filtering out sediment and pollutants,
- functioning as recharge areas for groundwater,
- providing essential breeding, rearing, and feeding habitat for many species of wildlife.

A review of the National Wetland Inventory indicates that there are no NWI wetlands on this site. Although the NWI is very thorough, it is not a complete inventory of all possible wetlands. Other regulated wetlands may be present.

The KDSWCD recommends contacting the U.S. Army Corps of Engineers and the Kane County Division of Environmental and Water Resources before commencing any construction activities that may impact wet areas or floodplains. Please see the information on Regulatory Agencies (page 28) for wetland regulation information.

ADVANCED IDENTIFICATION OF WETLANDS (ADID)

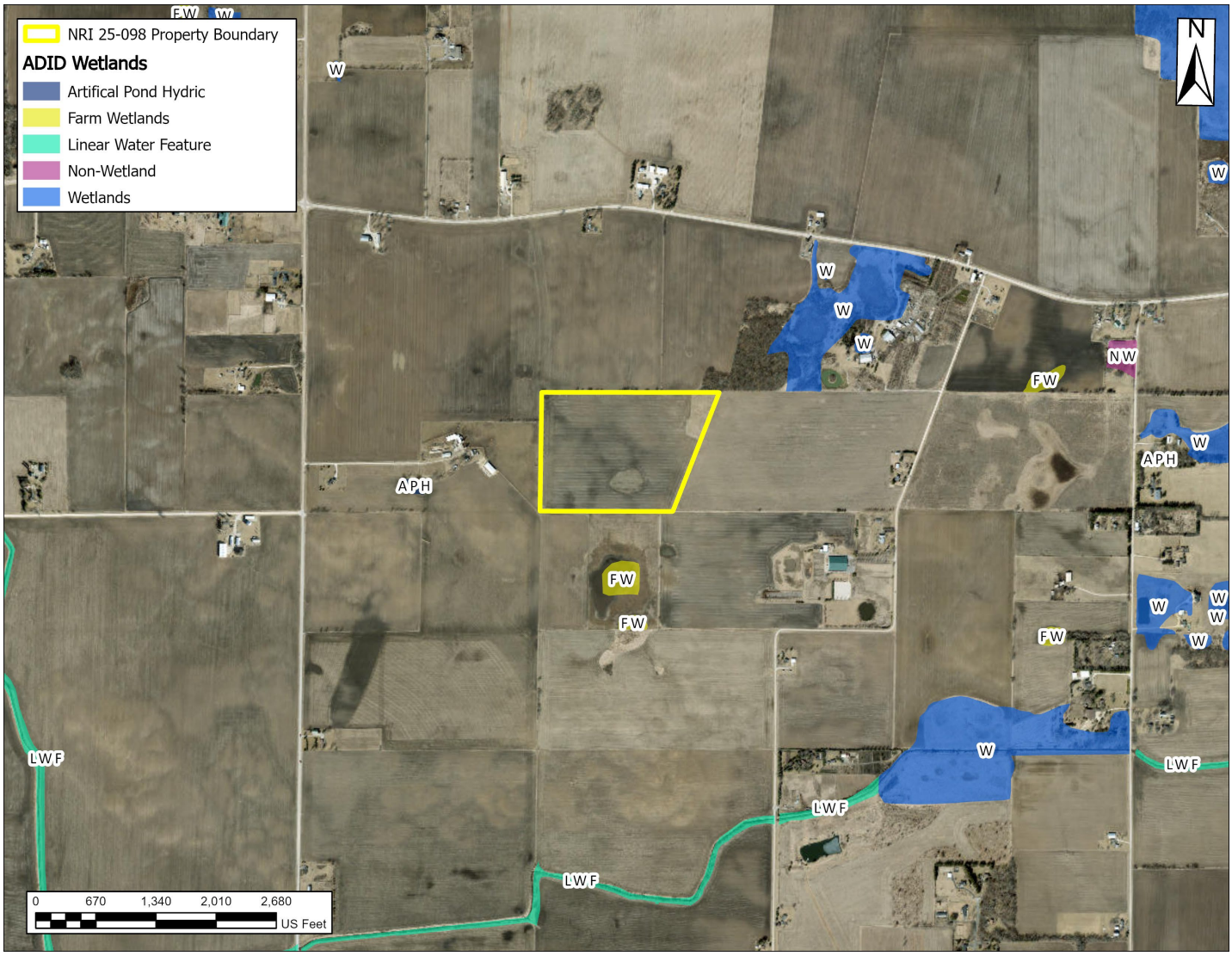


Figure 5: Advanced Identification of Wetlands (ADID), Kane County

Released in August of 2004, the Kane County Advanced Identification of Wetlands (ADID) study was a cooperative effort between federal, state, and local agencies to identify the location and quality of the wetlands of Kane County and to develop wetland protection strategies. ADID studies are a U.S. Environmental Protection Agency program to provide improved awareness of the locations, functions, and values of wetlands and other waters of the United States. This information can be used by federal, state, and local government to aid in zoning, permitting, and land acquisition decisions. In addition, the information can provide data to agencies, landowners, and private citizens interested in restoration or protection of aquatic sites and resources. For more detailed information regarding wetlands in Kane County, please refer to the Advanced Identification of Wetlands (ADID) study at:

http://dewprojects.countyofkane.org/adid/

A review of the Kane County ADID map revealed that no ADID wetlands have been identified on this site.

FLOODPLAINS

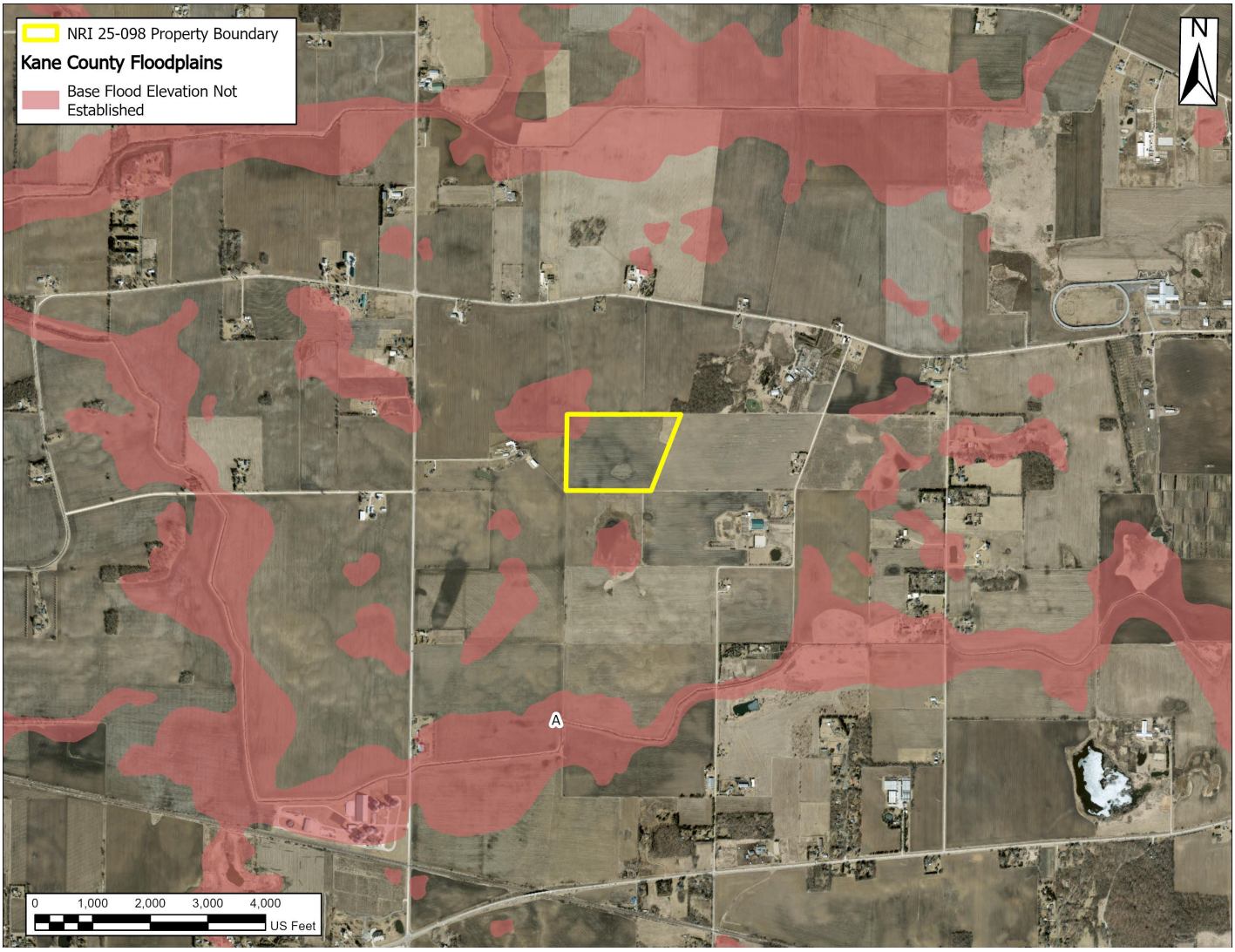


Figure 6: Floodplain map - Federal Emergency Management Agency (FEMA)

Undeveloped floodplains provide many natural resources and functions of considerable economic, social, and environmental value. Floodplains often contain wetlands and other important ecological areas as part of a total functioning system that impacts directly on the quality of the local environment.

Here are a few of the benefits and functions of floodplains:

- natural flood storage and erosion control,
- water quality maintenance,
- groundwater recharge,
- nutrient filtration,
- biological productivity/wildlife habitat,
- recreational opportunities/aesthetic value.

Also, development in a floodplain has a hazardous risk of damage by high flood waters and stream overflow. For this reason, floodplains are generally unsuited to most development and structures.

According to the FEMA Flood Insurance Rate Map, 6.28 percent of this site is within the boundaries of a 100-year floodplain. Any development in the floodplain, other than restoration efforts, is generally unsuited and hazardous and will impede the beneficial functions of the floodplain. See the Regulatory Agencies page near the end of this report for information regarding floodplain regulations.

Please see the information on Regulatory Agencies (page 28) for information regarding floodplain regulations.

WATERSHEDS AND STREAMS

Watersheds are areas of land that eventually drain into a river or stream. Everyone lives in a watershed, no matter if a river or stream is nearby. Watersheds may be named according to its major river or stream. Watersheds, such as the Mississippi River watershed, may be extremely large, encompassing multiple states. Watersheds may also be subdivided into smaller units, such as subwatersheds. Some very small watersheds may not contain a named stream. However, the water that drains from that watershed eventually reaches a stream or river.

Watersheds in the United States are delineated by the U.S. Geological Survey (USGS) using a nationwide system based on surface hydrologic features. Examples of these surface hydrologic features include discharge flow, substratum size, stream width, and depth. This USGS system divides the country into 22 regions (2-digit), 245 subregions (4-digit), 405 basins (6-digit), nearly 2,400 subbasins (8-digit), roughly 19,000 watersheds (10-digit), and approximately 105,000 subwatersheds (12-digit). The USGS uses this system to assign each hydrologic area with a hierarchical Hydrologic Unit code (HUC), which consists of 2 additional digits for each level within the hydrologic unit system.

A complete list of Hydrologic Unit codes, descriptions, names, and drainage areas can be found in the United States Geological Survey Water-Supply Paper 2294, entitled "Hydrologic Unit Maps".

Common Watershed Goals:

- Protect and restore natural resources
- Improve water quality
- Reduce flood damage
- Enhance and restore stream health
- Guide new development to benefit watershed goals
- Preserve and develop green infrastructure
- Enhance education and stewardship

For information on Watershed Planning and Protection in Kane County, visit:

Kane County Watershed Planning and Special Projects

Rivers and Streams are necessary components of successfully functioning ecosystems. It is important to protect the beneficial functions and integrity of our local streams and rivers. Development near stream systems has the potential to increase flooding, especially in urban areas where there is a lot of impervious surface and a greater amount of stormwater runoff. Pollution is also an issue for stream systems in urban and rural areas. It is rare for any surface waters to be impacted by only one source of pollution. With few exceptions, every land-use activity is a potential source of nonpoint source water pollution (IEPA Nonpoint Source Pollution).

The Illinois Environmental Protection Agency (IEPA) provides the following regarding nonpoint source pollution: “Nonpoint source pollution (NPS) occurs when runoff from rain and snowmelt carries pollutants into waterways such as rivers, streams, lakes, wetlands, and even groundwater. Examples of or sources of NPS pollution in Illinois include runoff from farm fields, livestock facilities, construction sites, lawns and gardens, city streets and parking lots, surface coal mines, and forestry. The major sources of NPS pollution in Illinois are agriculture, urban runoff, and habitat modification.”

Nutrient management is of vital importance to the health of our rivers and streams. Nutrient load in our local streams and rivers has contributed to the Gulf of Mexico hypoxia, or a “dead zone” located where the Mississippi River meets the Gulf of Mexico. This dead zone has little to no biological activity. Yearly averages indicate the dead zone to be greater than 5,000 square miles in size. Illinois was required and has introduced a plan to reduce nutrient loss from point source pollution sources, such as wastewater treatment plants and industrial wastewater, as well as nonpoint pollution sources. Read Illinois’s Plan for reducing nutrient loss here:

https://epa.illinois.gov/topics/water-quality/watershed-management/excess-nutrients/nutrient-loss-reduction-strategy.html

WATERSHEDS AND SUBWATERSHEDS

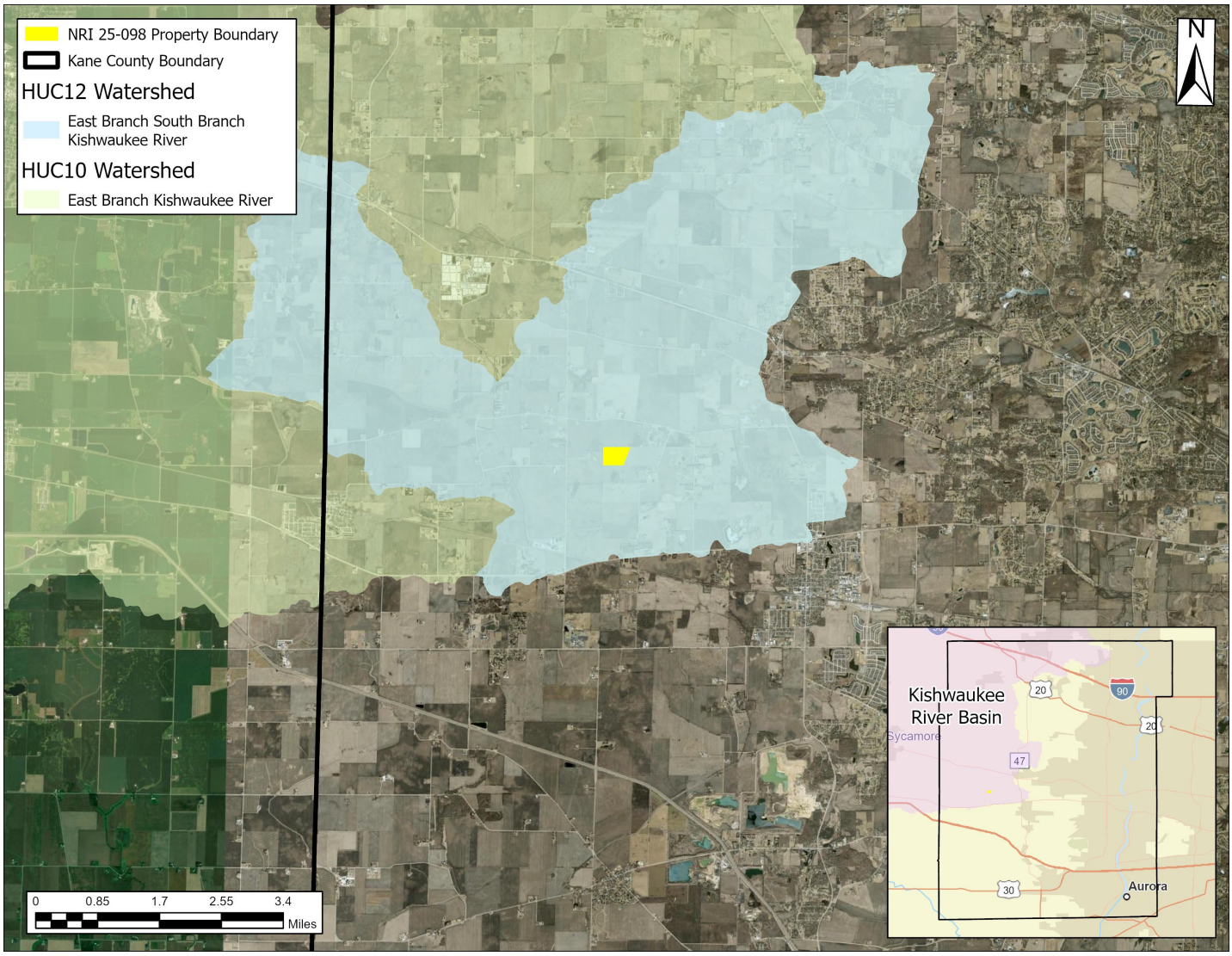


Figure 7: Watersheds and Subwatersheds

Kane County has been subdivided into four watersheds by federal and state agencies, based upon the drainage area of local rivers: the Kishwaukee River watershed in the northwest; a small portion of the Des Plaines River watershed, along the border with DuPage County; and the Upper and Lower Fox River watersheds, which occupies the central portion of the county. The Kishwaukee River watershed is part of the Rock River watershed, while the Des Plaines River watershed and both the Upper and Lower Fox River watersheds are part of the Illinois River watershed. Both the Rock River and Illinois River are part of the greater Mississippi River watershed. These watersheds have been subdivided into smaller local watersheds for planning.

Local watershed management planning is an important effort for the protection of local water resources and can involve watershed organizations, citizens, communities, municipalities, as well as state, local, tribal and/or federal environmental agencies. Water quality is a direct reflection of its watershed.

The map above indicates that 100 percent of this site is located within the boundaries of subwatershed HUC12-070900060502 East Branch South Branch Kishwaukee River of the HUC10-0709000605 East Branch Kishwaukee River watershed.

AQUIFER SENSITIVITY

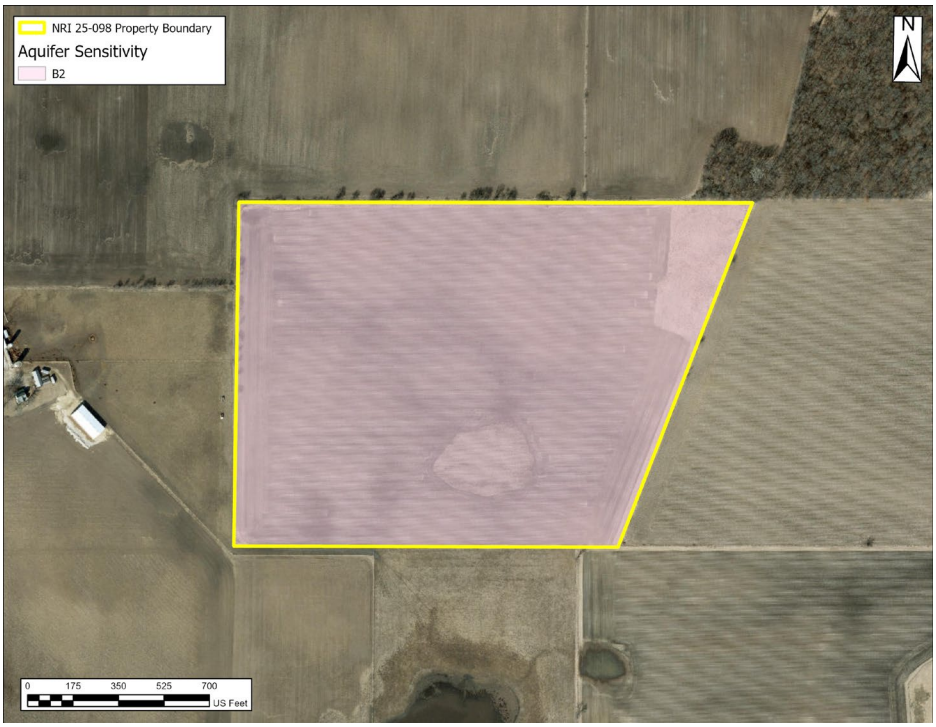


Figure 8: Aquifer Sensitivity to Contamination map

The map of Aquifer Sensitivity to Contamination is a representation of the potential vulnerability of aquifers (underground water sources) to contamination from pollutants at or near the surface of the ground. The U.S. Environmental Protection Agency (US EPA) defines aquifer sensitivity contamination potential as "a measure of the ease with which a contaminant applied on or near the land surface can migrate to an aquifer."

Aquifers function as a storage area for groundwater, which makes them a valuable source of fresh water. Groundwater accounts for a considerable percentage of the drinking water in Kane County. The chart below shows the aquifer sensitivity classifications. **This site is classified as having a moderately high potential for contamination.**

A1	Aquifers are greater than 50ft thick and within 5ft of the surface	**C1**	Aquifers are greater than 50ft thick and between 20 and 50ft below the surface
A2	Aquifers are greater than 50ft thick and between 5 and 20ft below the surface	**C2**	Aquifers are between 20 and 50ft thick and between 20 and 50ft below the surface
A3	Aquifers are between 20 and 50ft thick and within 5ft of the surface	**C3**	Sand and gravel aquifers are between 5 and 20ft thick, or high- permeability bedrock aquifers are between 15 and 20ft thick, both between 20 and 50ft below the surface
A4	Aquifers are between 20 and 50ft thick and between 5 and 20 feet below the surface	**D1**	Aquifers are greater than 50ft thick and between 20 and 50 ft below the surface
B1	Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both within 5ft of the surface	**D2**	Aquifers are between 20 and 50ft thick and between 50 and 100ft below the surface
B2	Sand and gravel aquifers are between 5 and 20ft thick, or high-permeability bedrock aquifers are between 15 and 20ft thick, both between 5 and 20ft below the surface	**D3**	Sand and gravel aquifers are between 5 and 20ft thick, or high- permeability bedrock aquifers are between 15 and 20ft thick, both between 50 and 100ft below the surface
E1	Sand and gravel or high-permeability bedrock aquifers are not present within 100 ft of the land surface		

A = High Potential, B = Moderately High Potential, C=Moderate Potential, D = Moderately Low Potential, E = Low Potential

TOPOGRAPHY AND OVERLAND FLOW

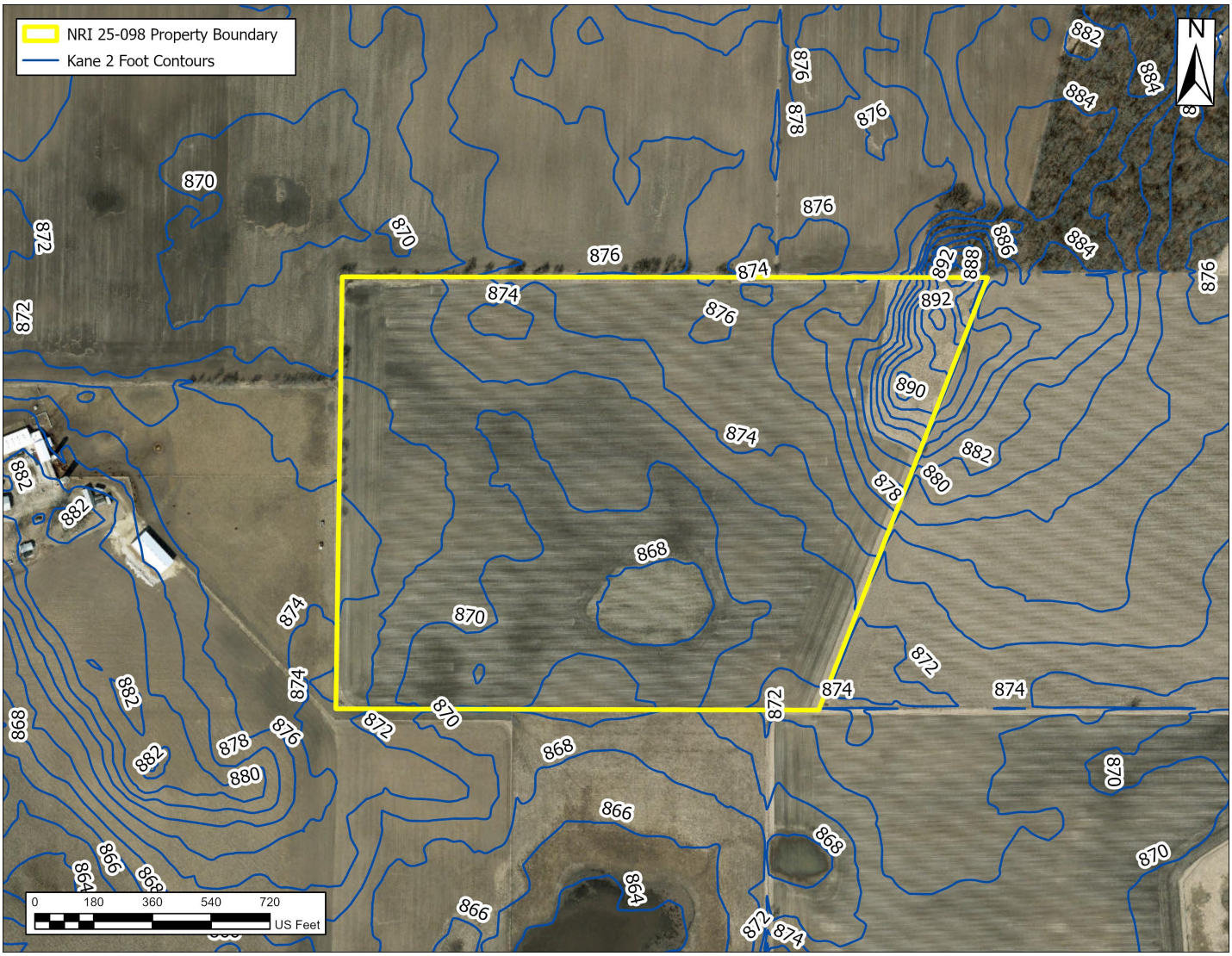


Figure 9: Topographic map showing contour lines

Topographic maps (contour maps) give information on the elevation of the land, which is important to determine slope steepness, natural water flow paths, and watershed information. The natural water flow path can determine where water leaves a property and where it may impact surrounding natural resources. Slope, along with soil erodibility factors, affect the potential of soil erosion on a site. Contour maps can also help determine the areas of potential flooding. It is important to consider the direction of water flow and erosion potential on all construction sites. Areas where water leaves the site should be monitored for sediment and other pollutants, which could contaminate downstream waters.

The map above shows contour lines with 2 feet elevation distance between each line. The high point of this property is in the Northeastern portion of the site at an elevation of approximately 894 feet above sea level. The property generally drains to the South via overland flow. The lowest elevation on the property is approximately 868 feet above sea level.

Please Note: This site's actual topography does not match the map. The site has been materially altered after the topological map information was gathered and produced.

STORMWATER MANAGEMENT

Managing stormwater and stormwater runoff is critical for all development. Stormwater runoff from a site usually increases due to soil compaction, more impervious surfaces, loss of vegetation, and soil degradation during construction activities. Increased runoff causes downstream flooding, soil erosion, sedimentation, and pollution of surface waters. The KDSWCD recommends the use of onsite stormwater management strategies whenever possible. These strategies include stormwater retention and detention basins, bioswales, raingardens, the use of natural depressions and vegetated swales, deep-rooted native plants, permeable pavers or permeable asphalt. A combination of these and other practices may be able to retain stormwater onsite. The Illinois Environmental Protection Agency (IEPA) now recommends that stormwater pollution prevention plans include post-construction stormwater management to keep as much stormwater on the site, as possible.

Site assessment with soil testing should help to determine what stormwater management practices are best for your site. Insufficient stormwater management has the potential to cause or aggravate flooding conditions on surrounding properties, or elsewhere in the watershed. Please refer to the Kane County Stormwater Ordinance for stormwater requirements and minimum standards.

https://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources.aspx

SOIL EROSION

Soil erosion is the degradation of soil, mostly caused by the force of rain and the movement of water detaching soil particles and carrying the soil off the site. Factors that affect soil erosion are the slope of the land, the inherent properties of the soil, and the cover (or lack of cover) on the soil surface. Extra care must be taken to prevent or reduce soil erosion on construction sites containing highly erodible soils.

The potential for soil erosion during and after construction activities could have major impacts, both onsite and offsite. The erosion and resulting sedimentation may become a primary nonpoint source of water pollution. Eroded soil during the construction phase can create unsafe conditions on roadways, degrade water quality, and destroy aquatic ecosystems lower in the watershed. Soil erosion also increases the risk of flooding due to choking culverts, ditches, and storm sewers, and reduces the capacity of natural and man-made detention facilities.

Construction and development activities should include a soil erosion and sedimentation control plan. Erosion and sedimentation control measures include:

- staging the construction to minimize the number of disturbed areas present at the same time,
- keeping the ground covered, either by mulch or vegetation, and
- keeping runoff velocities low.

Many construction sites are required to develop and follow a Stormwater Pollution Prevention Plan (SWPPP) in order to be in compliance with local, state, and federal laws regarding soil erosion and stormwater management. Soil erosion and sedimentation control plans, including maintenance responsibilities, should be clearly communicated to all contractors working on the site. Special care must be taken to protect any wetlands, streams, and other sensitive areas.

Please refer to the Illinois Urban Manual for erosion and sediment control information and technical guidance when creating erosion and sediment control plans. The practice standards and standard drawings from the Illinois Urban Manual represent the minimum standard in Illinois. Contact the KDSWCD for assistance in preparing a stormwater pollution prevention plan.

HIGHLY ERODIBLE LAND (HEL)

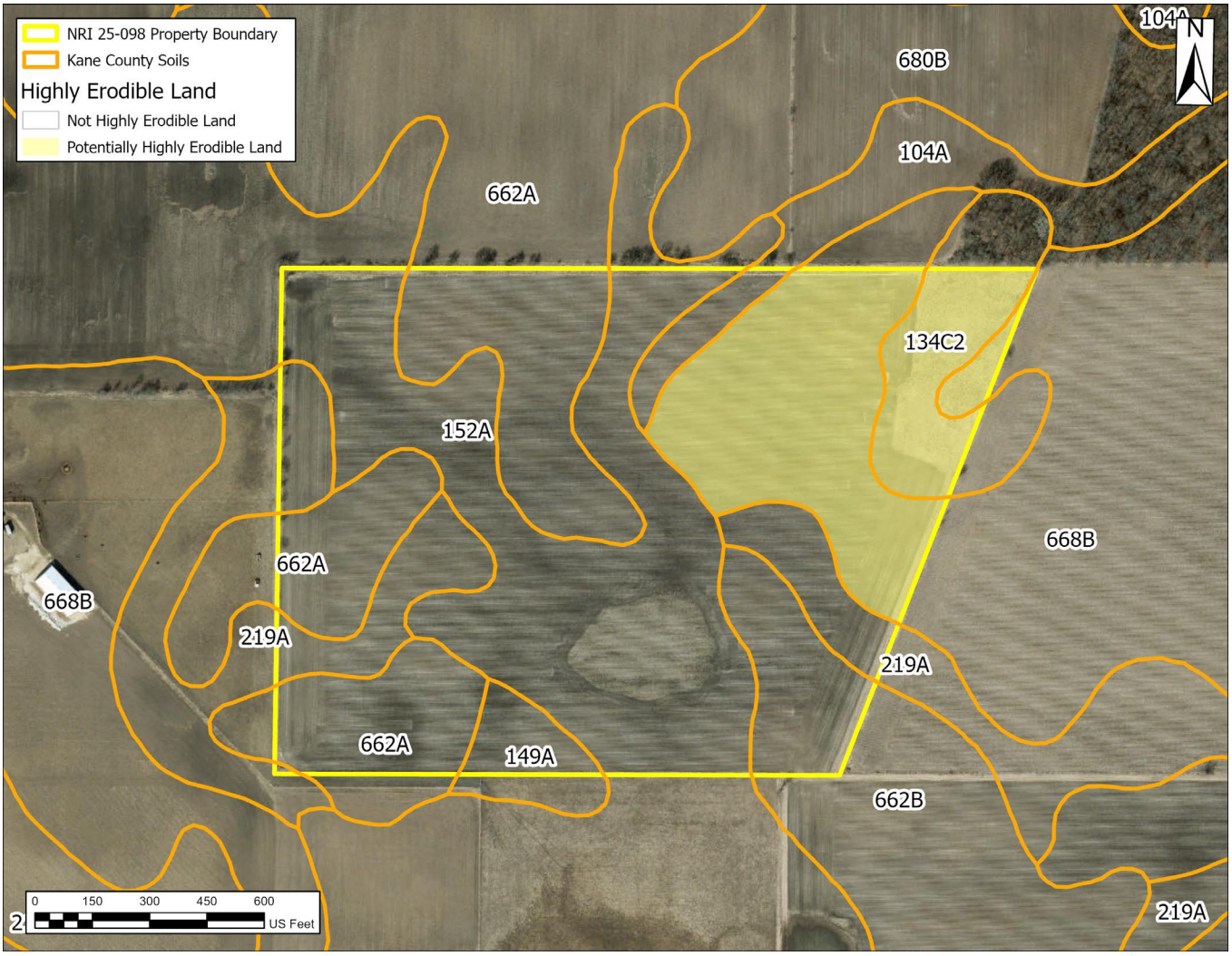


Figure 10: Highly Erodible Land map

Soils vary in their susceptibility to erosion. Highly erodible land (HEL) is land that can erode at excessive rates. Highly erodible land is generally sloping and contains soils that are susceptible to soil erosion by runoff and raindrop impact. The susceptibility to erosion and the highly erodible rating depends upon several factors and properties of the soil. Fine-textured soils high in clay have low erodibility values, because the soil particles are resistant to detachment. Coarse-textured soils, such as sandy soils also have low erodibility values because the water infiltrates and they have less runoff. Medium textured soils, such as loams, are moderately susceptible to detachment and they produce moderate runoff. Soils having a high silt content, like many soils in Kane County, are the most erodible of all soils. They are easily detached and tend to crust and produce large quantities and higher rates of runoff.

Other factors that affect the erodibility of soils include the force of the rainfall, the steepness and length of the slope of the land, and the amount of organic matter in the surface soil layer.

Highly Erodible Land (HEL) contains soils that have been determined by the USDA Natural Resources Conservation Service to be highly erodible. The HEL determination uses a formula involving the properties previously described, to determine the Soil Erodibility Index. Soils that have a Soil Erodibility Index above a certain value are considered highly erodible or potentially highly erodible. **Soils on this site are considered Potentially Highly Erodible Land (PHEL) by the NRCS.**

SOILS & SOIL INTERPRETATIONS

Soils are the foundation of life. Soil is a dynamic ecosystem comprised of living things: plants, animals, and microscopic organisms. Soil is also a substance composed of various minerals and organic matter, interfused with lots of pore spaces which help move and store air and water. Soils are formed over hundreds and thousands of years, taking about 500 years to form an inch of topsoil. Soil is formed by the influences of climate, organisms (plants and animals), topography, the material in which it is developing (parent material), and time. There are thousands of soil series in the world. In Illinois alone, there are over 600 different soil series. Each soil series is unique in its content and its behavior for a particular use.
The different soils across the U.S. have been mapped and identified by the USDA Natural Resources Conservation Service (NRCS) in a soil survey. The soil map of this area (Figure 12: Soil Survey) indicates different soil map units. Each soil map unit and corresponding symbol represent a phase of a soil series. Phases include slope, erosion, flooding frequency, etc. of each soil. Each soil and associated phase have strengths and limitations for a variety of land uses such as septic systems, buildings site development, local roads, and many other uses.

See the Soil Map Units Table in the Soil Survey section for the composition of soil map units of the site. See the Soil Interpretations section for the soil interpretations for the proposed use of the site.

How soil is managed as a resource can be either beneficial or detrimental for the environment, or for any other particular use. It is difficult to change the inherent properties of soil, such as the mineral composition or the amount of sand, silt, or clay within soil. However, it is easy to compact or erode soil to the extent that many soil functions, such as water storage, infiltration, rooting medium, carbon storage, and soil health could all become compromised or destroyed. Management techniques to protect the integrity and functions of soil include:

- limiting traffic on the site to reduce compaction of the soil surface
- keeping the soil covered as much as possible, with deep rooted grasses or with mulch or other erosion control practices
- disturbing only the areas necessary for the footprint of structures and reducing or eliminating mass grading of sites

Soils and Onsite Waste Disposal

Soils are often used for onsite waste disposal or underground septic systems to dispose of sewage, especially for individual homes that are not connected to a municipal sewage system. No interpretive rating is given in this report for on-site wastewater disposal (septic systems). The detail of the soil information in the soil survey is not precise enough to determine suitability for the small area required for a septic system. **A Certified Professional Soil Classifier, in cooperation with the county department of public health, must conduct a soil evaluation to determine the suitability of the parcel for on-site wastewater disposal (i.e. septic system), as required by the State of Illinois.**

Soil Interpretation Ratings

The soil interpretation (limitation) ratings are used mainly for engineering designs for proposed uses, such as dwellings with or without basements, local streets and roads, small commercial buildings, etc. The ratings given are based on NRCS national criteria and are defined and used as follows:
Not Limited – This limitation rating indicates that the soil properties are generally favorable for the specified use and that any limitations are minor and easily overcome.
Somewhat Limited - This rating indicates that the soil properties and site features are unfavorable for the specified use, but that the limitations are moderate and can be overcome or minimized with special planning and design.
Very Limited - This indicates that one or more soil properties have severe limitations and are very unfavorable and difficult to overcome. A major increase in construction effort, special designs, or intensive maintenance is required. These costly measures may not be feasible for some soils that are rated as Very Limited.
Contact the KDSWCD for questions concerning soil and refer to the **Illinois Urban Manual** for best management practices for protecting soil

SOIL SURVEY

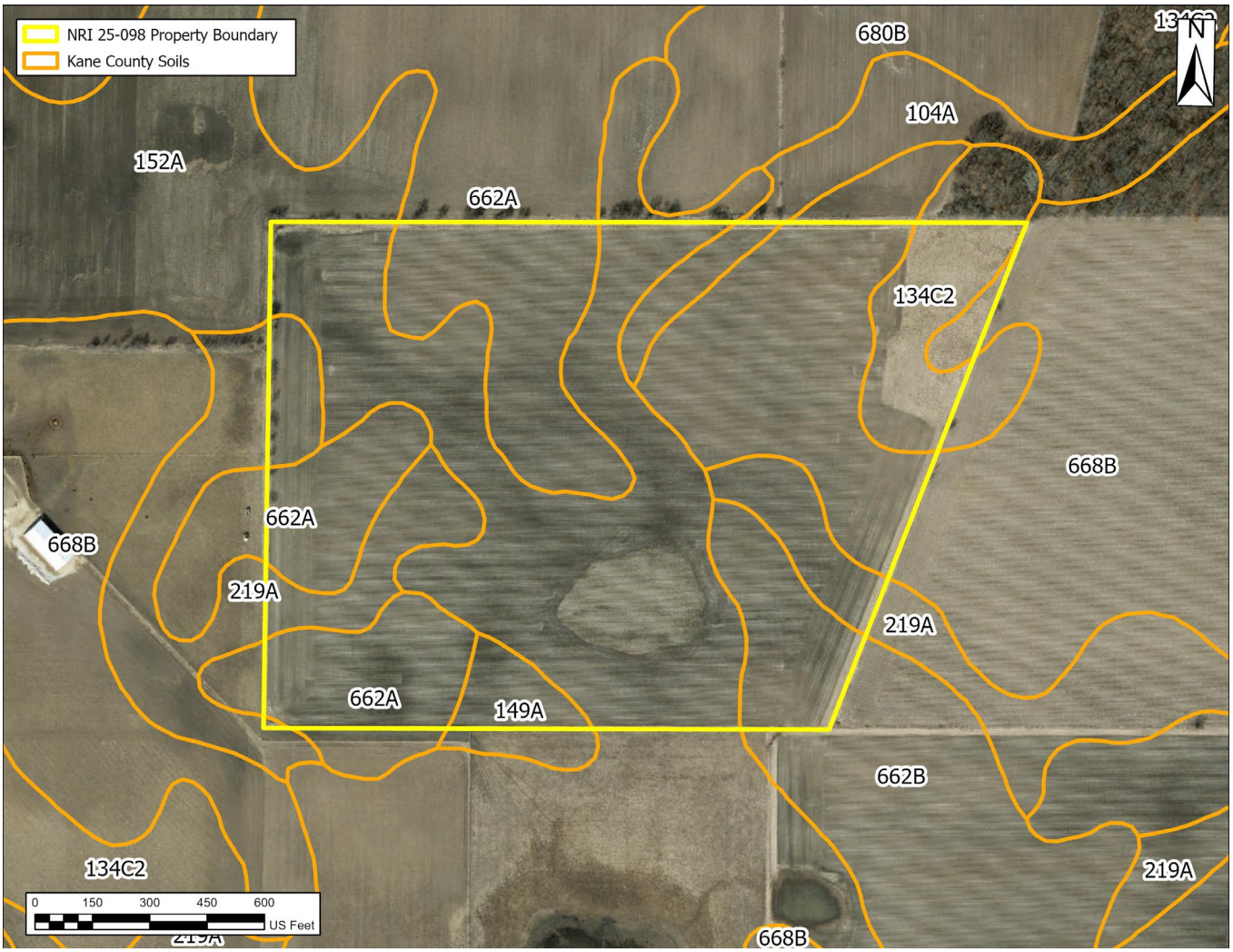


Figure 11: Soil Survey

The soil map unit symbol consists of a combination of numbers and letters which represent the interpretive phase of a soil series for an area of the landscape. Areas within the line of that symbol will have similar soil properties and interpretations.

The soil map in this report has been enlarged beyond the original scale. Enlargement of this map may cause misunderstanding of the accuracy and precision of the mapping. When enlarged, maps do not show the small areas of contrasting soil that could have been identified if the mapping was completed at a larger scale. The depicted soil boundaries and interpretations derived from the map units do not eliminate the need of onsite sampling, testing, and detailed study of specific sites for intensive uses. Thus, this map and its interpretations are intended for planning purposes only.

The KDSWCD suggests contacting a certified professional soil classifier to conduct an onsite investigation for point-specific soil information to determine the capabilities and the limitations of the soil for a specific use.

Table 1: Soil Map Units

SOIL MAP UNIT SYMBOL	PERCENT OF PARCEL	ACRES
104A – Virgil	2.1%	1.1
134C2 – Camden	6.1%	3.2
149A – Brenton	2.4%	1.3
152A - Drummer	32.6%	17.2
219A - Millbrook	10.2%	5.4
662A – Barony	22.9%	12.2
662B – Barony	6%	3.3
668B - Somonauk	17.6%	9.3
	Total	53

All percentages and acreages are approximate.

SOIL MAP UNIT DESCRIPTIONS

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

A map unit delineation of a soil map represents an area dominated by one or more major kinds of soil or miscellaneous area. 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. The scale of the maps limits the detail that can be shown. 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 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. These minor components are inclusions within the named map unit.

LIST OF MAP UNITS

104A	Virgil silt loam, 0 to 2 percent slopes
134C2	Camden silt loam, 5 to 10 percent slopes, eroded
149A	Brenton silt loam, 0 to 2 percent slopes
152A	Drummer silty clay loam, 0 to 2 percent slopes
219A	Millbrook silt loam, 0 to 2 percent slopes
662A	Barony silt loam, 0 to 2 percent slopes
662B	Barony silt loam, 2 to 5 percent slopes
668B	Somonauk silt loam, 2 to 5 percent slopes

SOIL INTERPRETATIONS – Shallow Excavations

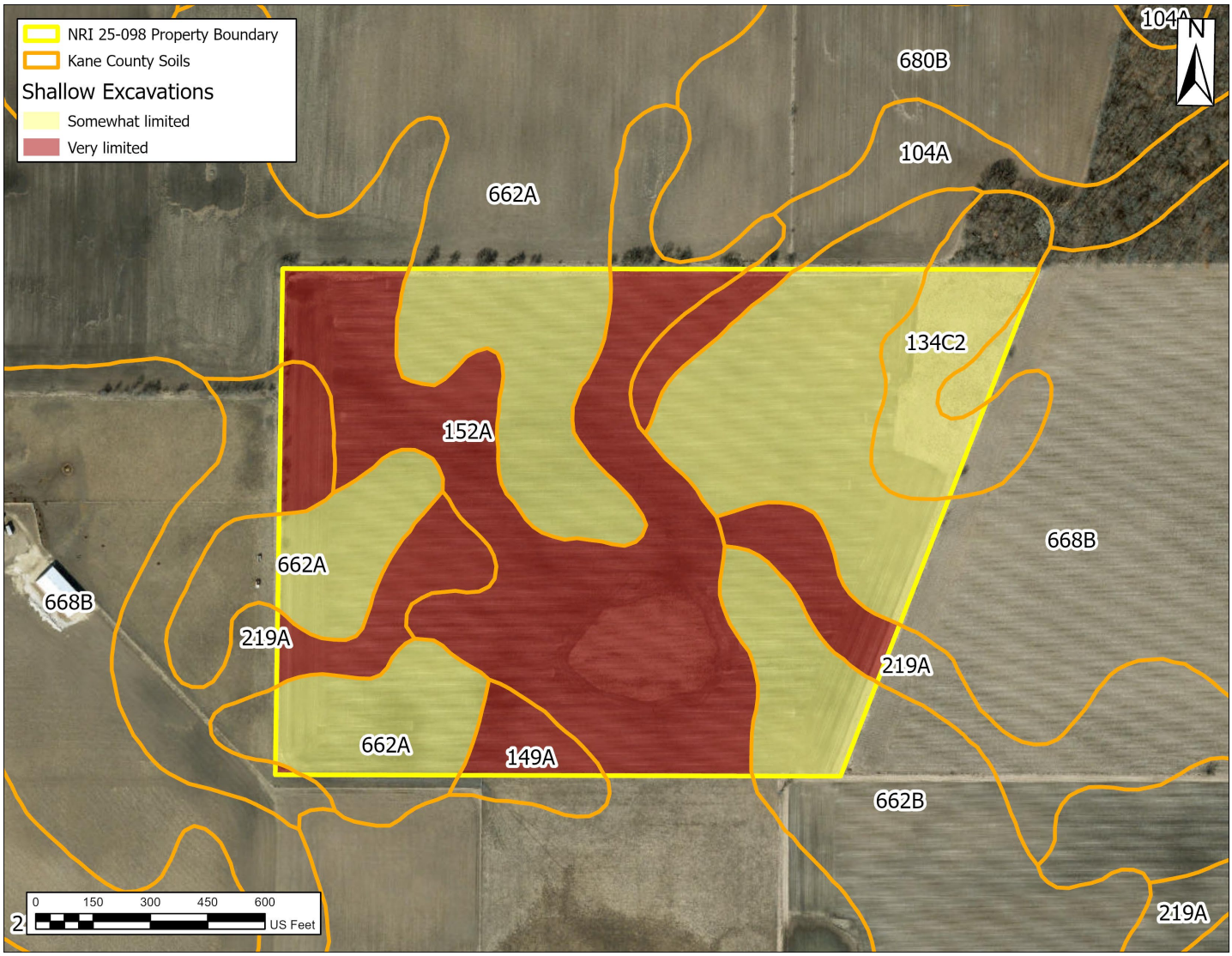


Figure 12: Soil Interpretations for Shallow Excavations

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock, hardness of bedrock, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high-water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing. **The high-water table is often a limiting factor in Kane County.**

Areas not shaded represent NOT LIMITED, and good performance and very low maintenance can be expected. Yellow represents SOMEWHAT LIMITED, and fair performance and moderate maintenance can be expected. Red represents VERY LIMITED, and poor performance and high maintenance are to be expected.

See the preceding **Soils Section** for more information concerning soil limitations.

SOIL INTERPRETATIONS – Local Roads and Streets

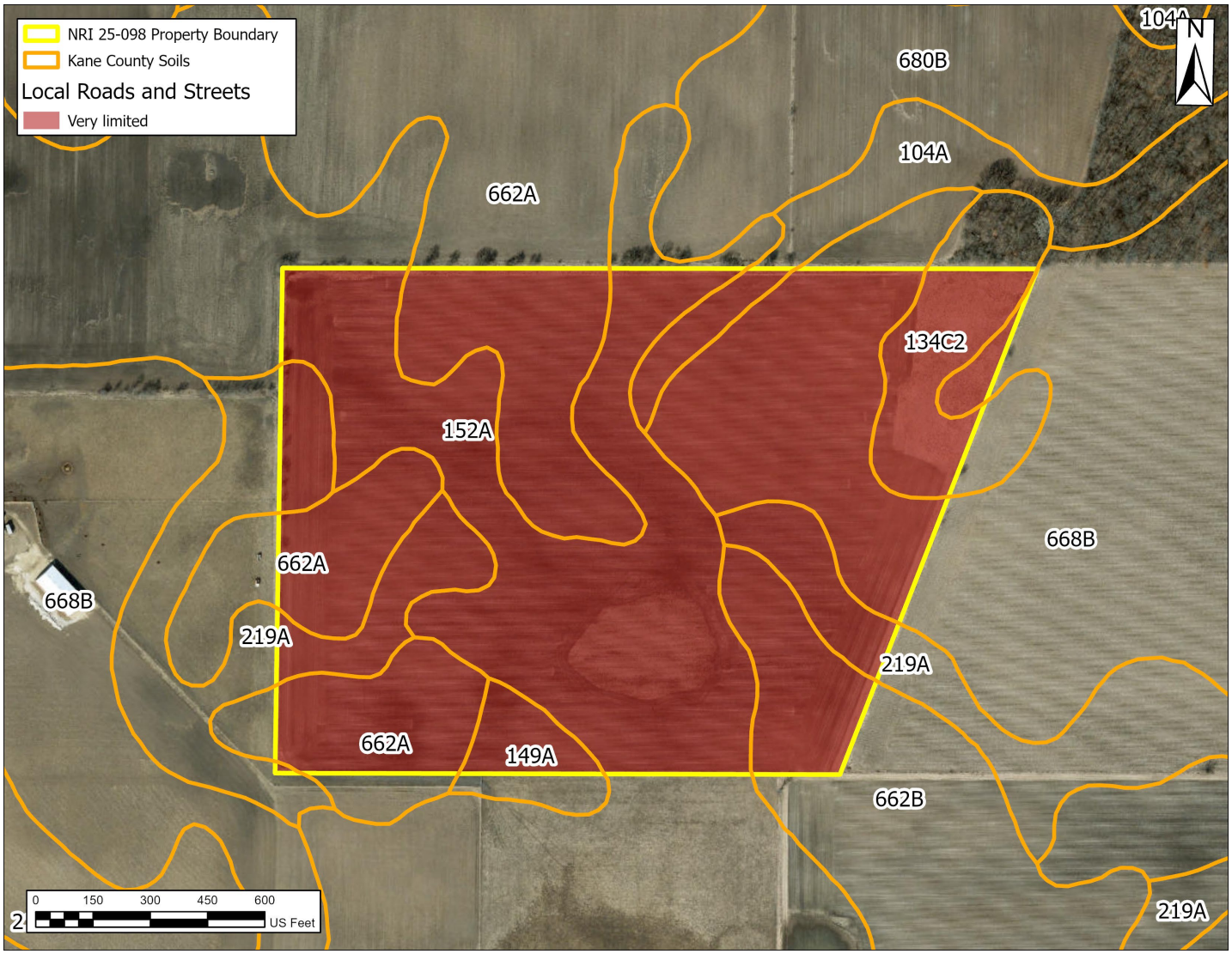


Figure 13: Soil Interpretations for Local Roads and Streets

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder.

The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding. **The high-water table is often a limiting factor in Kane County.**

Areas not shaded represent NOT LIMITED, and good performance and very low maintenance can be expected. Yellow represents SOMEWHAT LIMITED, and fair performance and moderate maintenance can be expected. Red represents VERY LIMITED, and poor performance and high maintenance are to be expected.

See the preceding **Soils Section** for more information concerning soil limitations.

SOIL INTERPRETATIONS – Solar Array, Soil-based Anchoring Systems

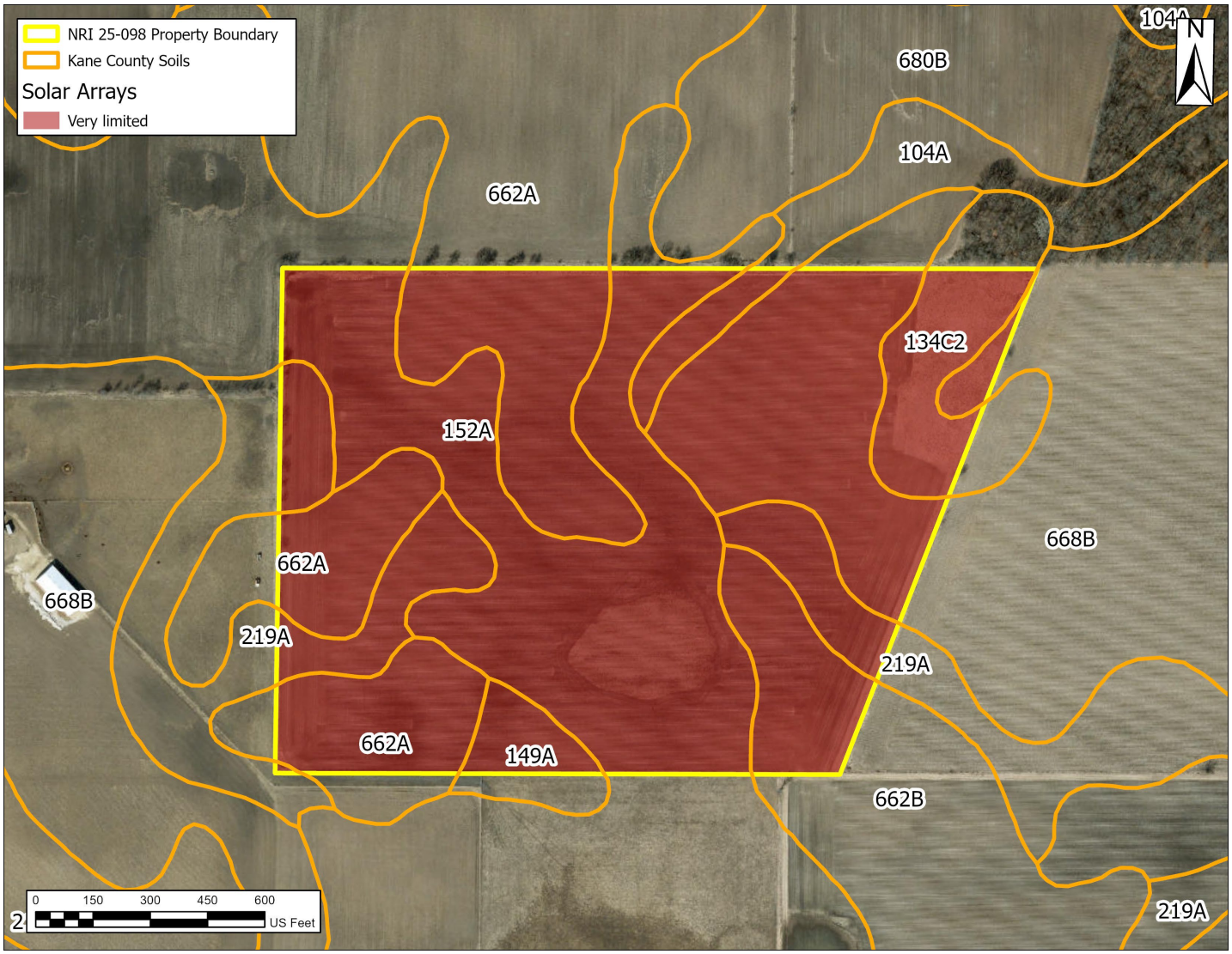


Figure 14: Soil Interpretations for Solar Arrays, Soil-based Anchoring Systems

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 the soil to provide a stable foundation. 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.

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.

The high-water table is often a limiting factor in Kane County.

Areas not shaded represent NOT LIMITED, and good performance and very low maintenance can be expected. Yellow represents SOMEWHAT LIMITED, and fair performance and moderate maintenance can be expected. Red represents VERY LIMITED, and poor performance and high maintenance are to be expected.

See the preceding **Soils Section** for more information concerning soil limitations.

WATER TABLE

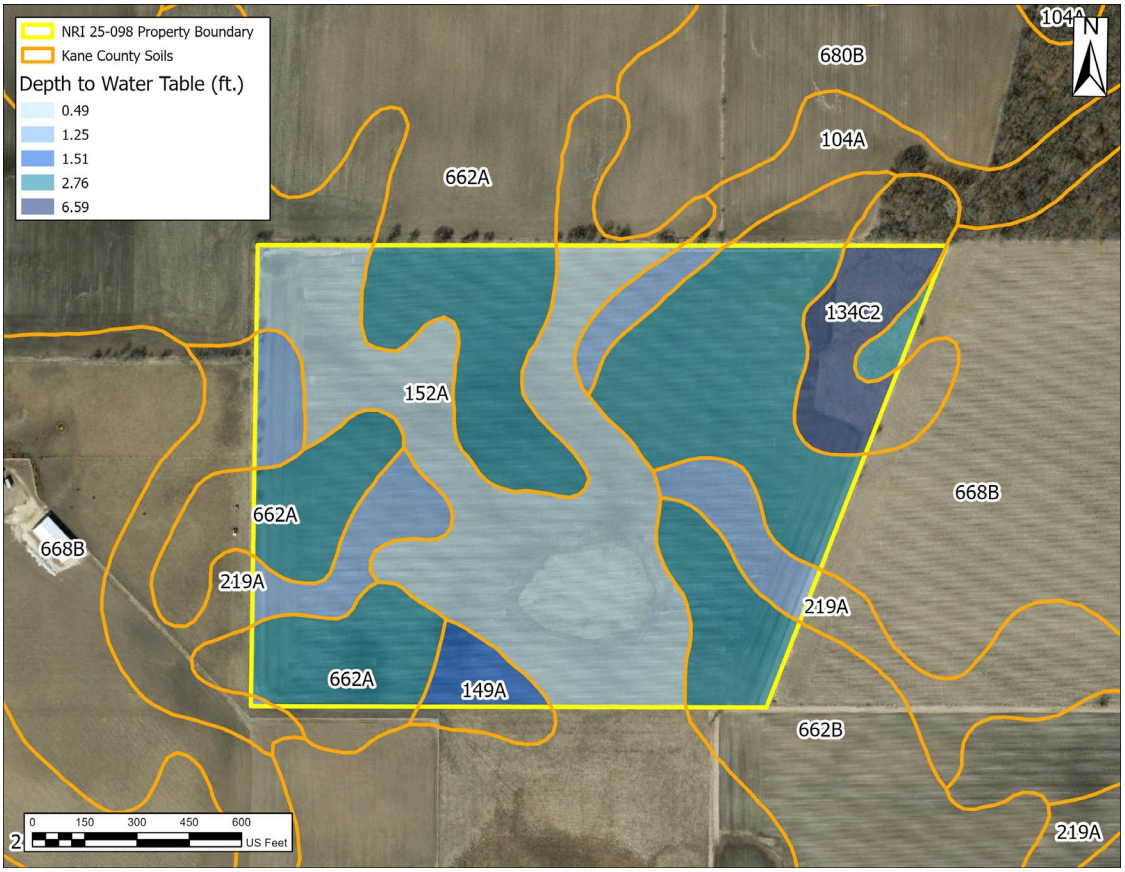


Figure 15: Map showing the depth to a seasonal high-water table

A seasonal high-water table, or the depth to a zone saturated with water in the soil during the wet season (typically spring through early summer), is present in most soils in Kane County, as it is in much of Illinois. The relatively low relief and flat landscape of the region slows the dissipation of water from the soil. This saturated zone fluctuates throughout the year and is closer to the surface in the spring and drops to deeper levels during summer and fall. Soils that are lower on the landscape are generally wetter than those soils higher on the landscape or on more sloping landscape positions. Some soils, especially those in landscape depressions and low-lying areas, have a water table above the soil surface. Water that occurs above the soil surface is considered "ponded" water. Ponding is different from flooding, as the water in ponded areas comes from water rising from below the soil surface or from runoff from adjacent areas. Flooding comes from the overflow of water from rivers and streams.

Artificial drainage systems may have altered the duration of the seasonal high-water table, especially those areas in cropland or former cropland. Even when soils are artificially drained, they will likely retain wet characteristics and the wetness will be difficult to eliminate entirely. However, artificial drainage may shorten the duration of the seasonal high-water table.

The wetness from the seasonal high-water table is a limiting property of the soil for many uses, especially homesites with or without basements, septic absorption fields, commercial buildings, and roads and streets. Most sites that are zoned for construction will require improved drainage, sump pumps, foundation drains, and other management practices to reduce the wetness. Any change to the natural drainage of the site has the potential to create flooding issues downstream from the site, so use caution in installing drainage systems.

The Soil Survey indicates a seasonal high-water table at a depth of 0.49 to 6.59 feet of the soil surface during the spring and early summer in most years, on the wettest soils of the site.

HYDRIC SOILS

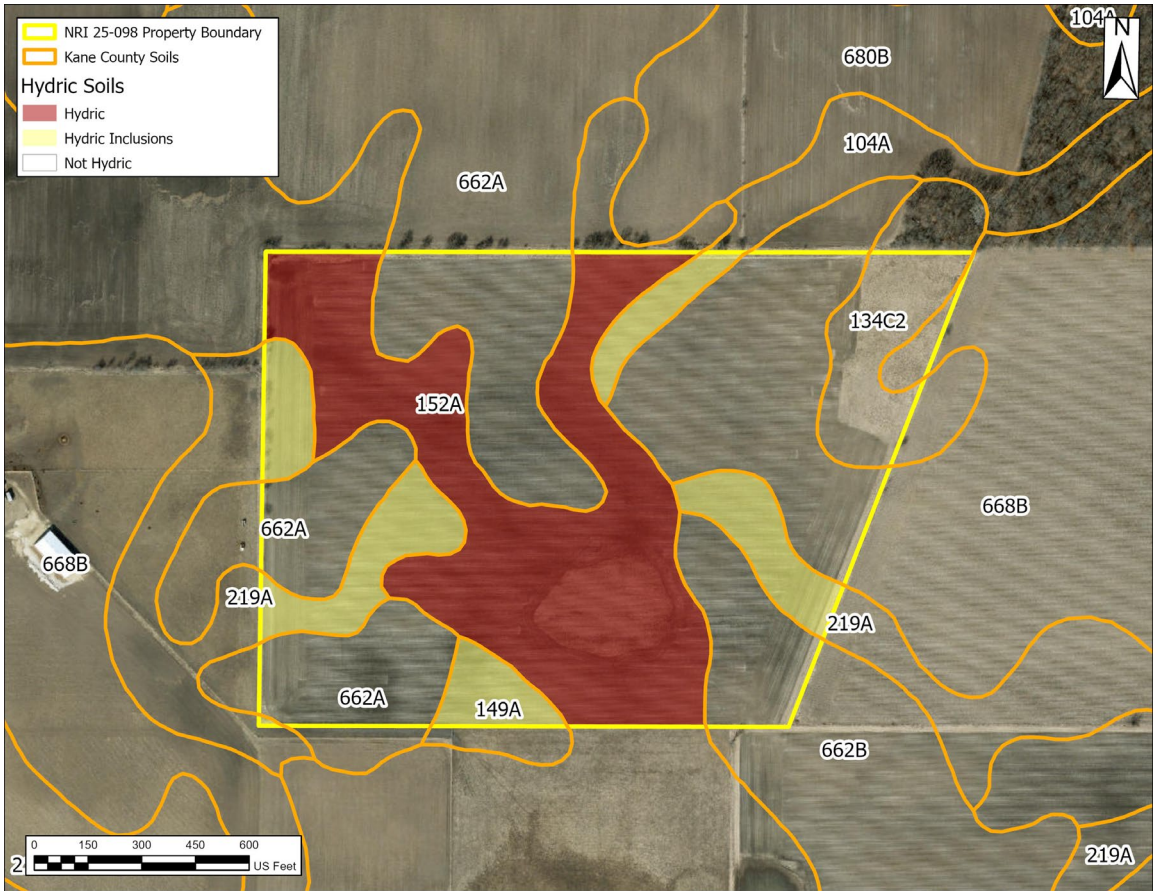


Figure 16: Hydric Soils map

Hydric Soils are wet soils that have a water table near the surface or above the surface, mostly in the spring and summer. The wetness is often a result of being on a lower position on the landscape. Many areas of hydric soils have been altered by artificial drainage systems. Even though they may have artificial drainage, they are still considered to meet the definition of a hydric soil. Although not all hydric soils are considered wetlands, hydric soils are a component of wetlands.

Even when hydric soils are artificially drained, they will likely retain wet characteristics and the wetness will be difficult to eliminate entirely. However, artificial drainage may shorten the duration of the seasonal high-water table. Most sites will require improved drainage, sump pumps, and other management practices to reduce the wetness. Any change to the natural drainage of the site has the potential to create flooding issues on and adjacent to the site, so use caution in installing drainage systems.

Some hydric soils are dominated by organic material (peat or muck) instead of mineral soil material and are not suitable construction sites, because of the low strength of the organic deposits. **Organic soils are extremely difficult to modify for other uses.**

Hydric inclusions are small areas (inclusions) of hydric soils in the lower positions of a landscape dominated by higher, nonhydric soils and these inclusions are not identified on the soil map, given the map scale. However, hydric inclusions may still have a significant impact on your site.

The Soil Survey indicates that Hydric Soils and Soils with Hydric Inclusions are on this site. A certified wetland determination may be needed prior to any earth disturbing activities. The KDSWCD recommends contacting the proper regulatory agencies (page 28).

PRIME FARMLAND – LAND EVALUATION & SITE ASSESSMENT

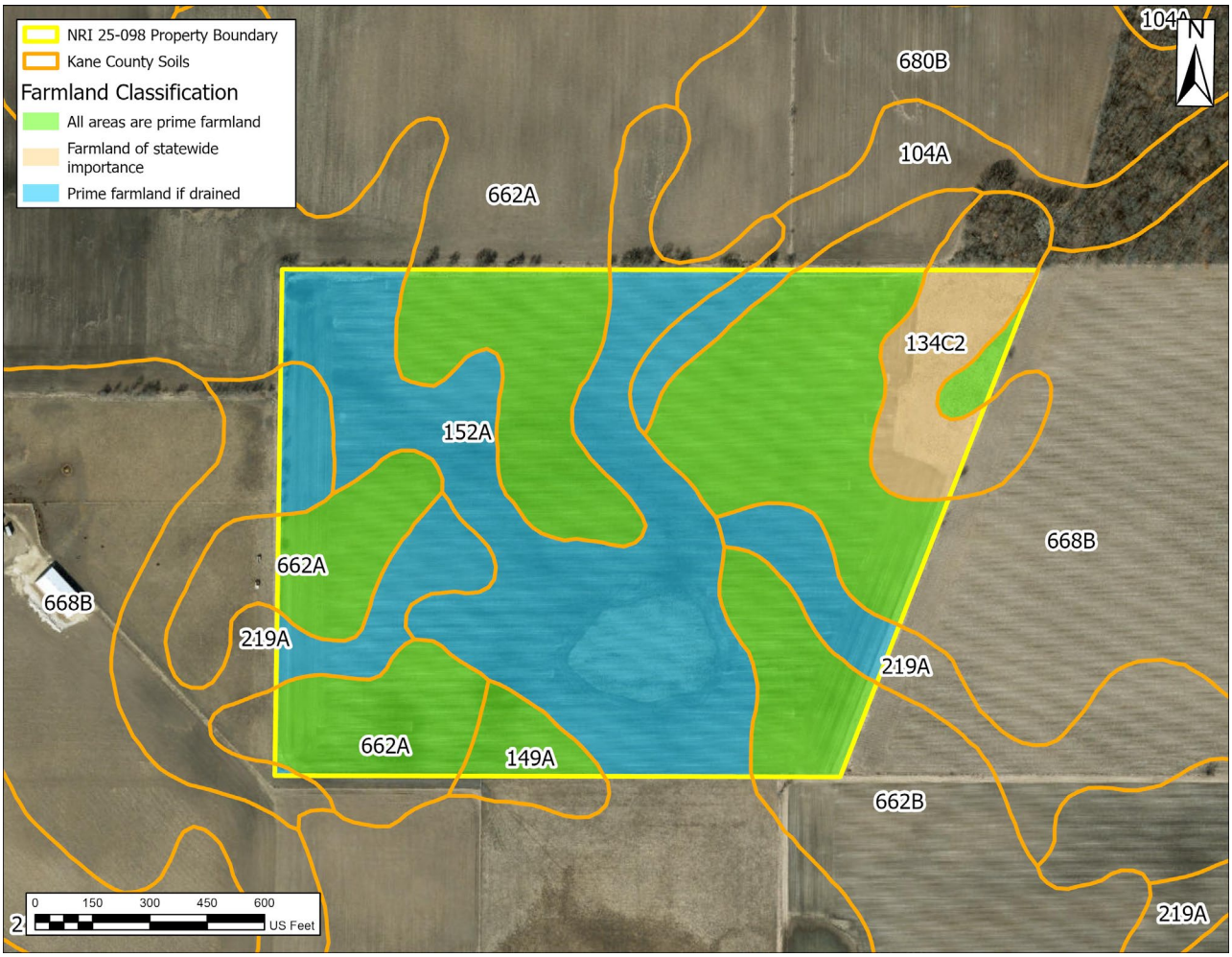


Figure 17: Prime Farmland map

Prime Farmland is a designation assigned by the U.S. Department of Agriculture defining land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these land uses. The Prime Farmland designation is assigned to each soil map unit.

In addition to Prime Farmland, there is Farmland of Statewide Importance (Important Farmland). Important Farmland is designated for soils that are slightly outside the definition of Prime Farmland. Prime and Important Farmland are valuable for Kane County agriculture, ag industry, and county tax base.

In order to protect the best farmland, a Land Evaluation and Site Assessment (LESA) system was developed and adopted by Kane County in 2003.

LESA is designed to determine the quality of land for agricultural uses and to assess a site for long term agricultural economic viability. The LESA is a 100-point maximum numerical value based on two parts – Land Evaluation (LE) and Site Assessment (SA). The LE is based upon the inherent ability of the soils of a parcel to produce commonly grown crops. The LE counts as 1/3 of the total score. The SA is a value based on the proximity of the parcel to agricultural areas. Parcels further from developed areas rank higher for protection. The SA counts for 2/3 of the LESA score.

Of this parcel, 6.1 percent or 3.2 acres are considered Farmland of Statewide Importance.

The LE value for this site is 30 and the SA value is 49 for a total LESA score of 79. This score represents Moderate Protection effort warranted.

REGULATORY INFORMATION

Wetlands, Rivers, Streams, and Other Waters: The laws of the United States, the State of Illinois, and local governments assign certain agencies specific and different regulatory roles to protect the waters within their jurisdictional boundaries. These roles include protection of navigation channels and harbors, protection against floodway encroachment, maintenance and enhancement of water quality, protection of fish and wildlife habitat, and protection of recreational resources. Unregulated use of waters could permanently destroy or alter the character of these valuable resources and adversely impact the public. Contact the proper regulatory authorities when planning any work associated with floodplains, wetlands, or other waters so that proper consideration and approval can be obtained.

Wetland and/or Floodplain Permit: Anyone proposing to dredge, fill, riprap, or otherwise alter the banks or beds of a floodplain or floodway; or construct, operate, or maintain any dock, pier, wharf, sluice, dam, piling, wall, fence, utility of a lake, stream, or river subject to federal, state, or local regulatory jurisdiction should apply for agency approvals.

Construction Permit: Anyone disturbing an acre or more of land during proposed construction activities should apply for the NPDES General Construction Permit ILR10. Building and stormwater permits should also be obtained locally from municipal government and/or Kane County.

REGULATORY AGENCIES

Wetlands, Floodplains, Streams, & Other Waters:

U.S. Army Corps of Engineers, Chicago District,
111 North Canal Street
Chicago, IL 60606-7206
(312) 353-6400
http://www.lrc.usace.army.mil/

Kane County Water Resources Division
719 Batavia Avenue
Geneva, IL 60134
(630)232-3400
https://www.countyofkane.org/FDER/Pages/environmentalResources/waterResources.aspx

Illinois Department of Natural Resources, Office of Water Resources
2050 W. Stearns Road
Bartlett, IL 60103
(847)608-3100
https://dnr.illinois.gov/waterresources/programs.html

NPDES General Construction Permit ILR10

Illinois Environmental Protection Agency, Division of Water Pollution Control
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794
(217)782-0610
https://www2.illinois.gov/epa/topics/forms/water-forms/Pages/default.aspx

The KDSWCD recommends 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 stage. This could reduce the time required to process necessary approvals. Please be advised that failure to coordinate with regulatory agencies could result in project shut down, fines and/or imprisonment.

CONTACTS

STATE AGENCIES

Illinois Department of Natural Resources
1 Natural Resources Way
Springfield, Illinois 62702-1271
(217)782-6302
http://dnr.state.il.us/

Illinois Department of Transportation
2300 South Dirksen Parkway
Schaumburg, Illinois 62764-0001
(217)782-7820/(800)452-4368
http://www.idot.illinois.gov/

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-3397
http://www.epa.state.il.us/

Illinois Natural History Survey
1816 South Oak Street MC652
Champaign, Illinois 61820
(217)333-6880
http://www.inhs.uiuc.edu/

COUNTY / LOCAL OFFICES

Kane County Government Center
719 South Batavia Ave.
Geneva, IL 60134
(630)232-3400
http://www.countyofkane.org/

Kane County Development Department
(630)232-3492

Kane County Dept. of Environmental Management
(630)208-5118

Kane County Forest Preserve District
1996 South Kirk Road, Suite 320
Geneva, IL 60134
(630)232-5980
forestpreserve.countyofkane.org

Kane County Health Department
1240 North Highland Avenue
Aurora, IL 60506
(630)208-3801

Kane-DuPage Soil and Water Conservation District
2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3

FEDERAL AGENCIES

U. S. Army Corps of Engineers
Regulatory Branch
231 S LaSalle Street, Suite 1500
Chicago, Illinois 60604
(312)846-5330
http://www.usace.army.mil

U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604
(312)353-2000 or (800)621-8431
http://www.epa.gov/region5/

U.S. Fish & Wildlife Service
Chicago Illinois Field Office
230 South Dearborn Suite 2938
Chicago, IL 60604
(847)298-3250
http://www.fws.gov/

U.S.D.A. Natural Resources Conservation Service
2315 Dean Street Suite 100
St. Charles, Illinois 60175
(630)584-7960 ext. 3
http://www.il.nrcs.usda.gov/

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U.S. Geological Survey, Water Supply Paper 2294, Hydrologic Unit Maps. 1994

https://pubs.usgs.gov/wsp/wsp2294/

SITE INSPECTION

Figure 18: Location of site inspection photos

A site inspection was conducted by **Resource Analyst, Emma Hunter** on **December 12, 2025**. **A thorough inspection of the property was not possible due to the snow cover.** The following photos were taken during this inspection and reflect the site conditions at that time.

SITE INSPECTION PHOTOS

Photo 1 facing northeast

Photo 2 facing north