Natural Resource Information Reports and Zoning Letters

WINNEBAGO COUNTY SOIL AND WATER CONSERVATION DISTRICT

Why do I need one?

- It's the law.
- Soil and Water Conservation District Act
  - Section 405/22.02A
    - Give Districts authority to conduct reports
    - assures that developers take into account limitations of the land they wish to develop

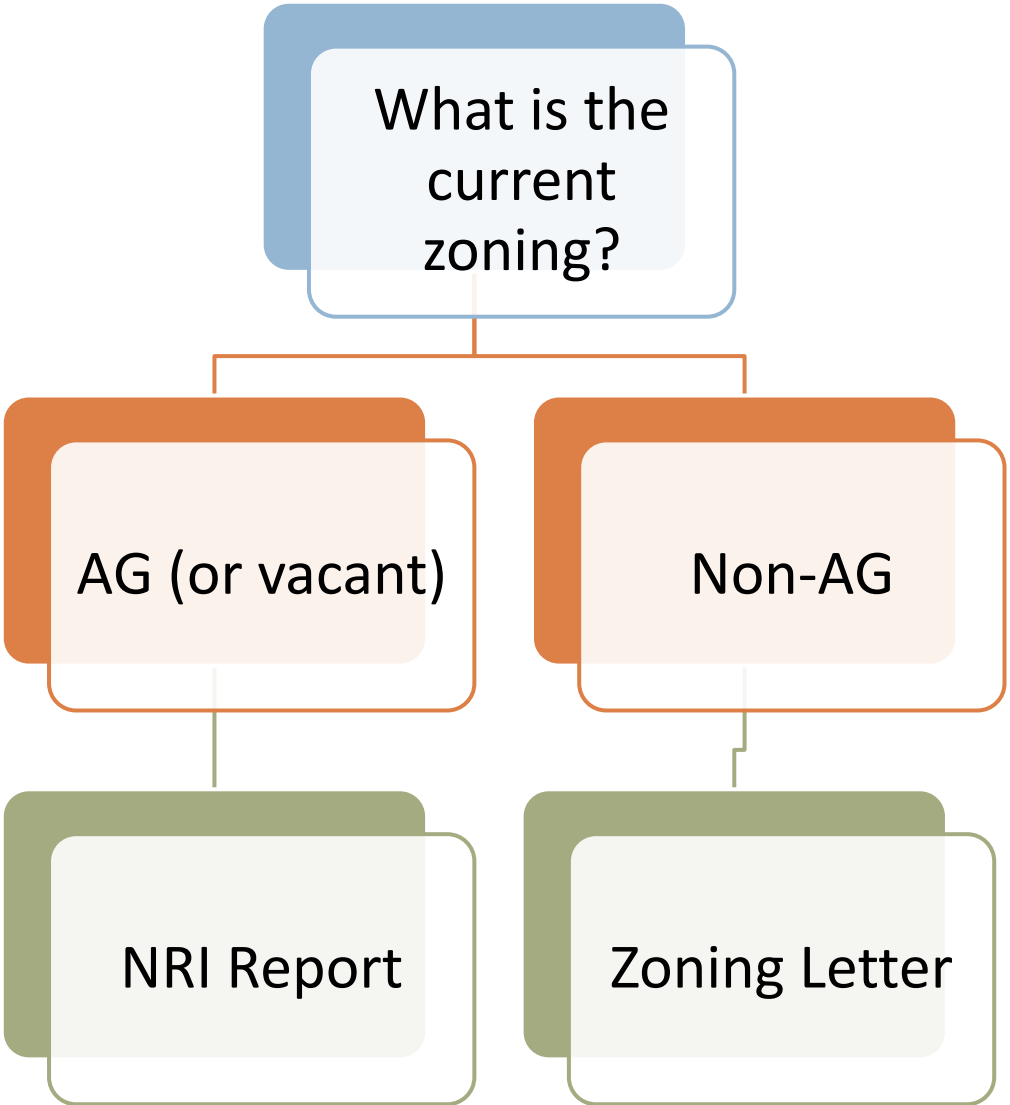
What is a SWCD Zoning Report?

- Presentation of most current natural resource information in an understandable format
- Contains description of present conditions and resource and potential impact on each other

Report Purpose

- assesses the natural resources on a parcel
- assesses suitable/inappropriate land uses
- factual inventory of the resources
- consumer protection report
- Report can be used as basis for good land use change decisions
- Helps to maintain quality of life

Which report do I need?



Zoning Letter

- Done for SUP's, Variances & changes in zoning not involving AG-zoned land
  - Letter stating soil conditions and limitations
  - Other natural resource concerns
  - Soils Map
  - No site visit from SWCD Office

Zoning Letter Process

Petitioner files application with SWCD

→

In-office analysis of site by SWCD staff

(no site visit)

→

Completed report mailed & emailed to zoning dept.
&
mailed to applicant

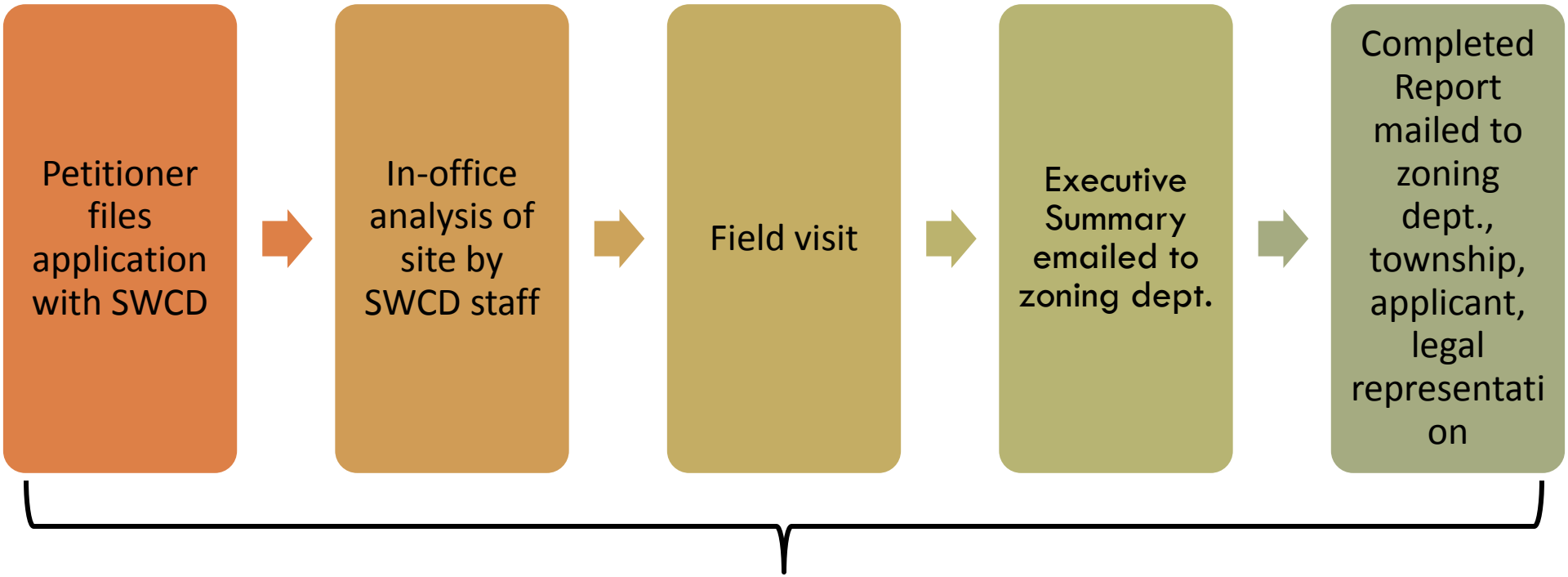
Critical for petitioner to file with SWCD Office as early as possible

Majority of reports generated by SWCD Office

Natural Resource Inventory Reports

- Done for SUP's, variances, changes in zoning involving AG (or vacant)
  - Comprehensive compilation of natural resource information
  - Includes site visit from SWCD Office but no soil borings are taken
  - Copy mailed to Applicant
  - Copy mailed to Zoning Dept.
    - Zoning dept. also receives Executive Summary via email
  - Copy mailed to Township

NRI Report Process



Critical for petitioner to file with SWCD Office as early as possible

The SWCD has final say on which report will be done for the zoning request

i.e. -Vacant land

Components of an N.R.I.

SWCD Comments	Executive Summary	Purpose and Intent	Location Map
Topography Map	Site Photos	Soils Map and Information	Watershed Impacts/ Flooding
Biological Resources	Ecological Compliance	Cultural Resources	Geological Information

Soils Information: Descriptions

Map unit: 61A - Atterberry silt loam, 0 to 2 percent slopes

The Atterberry component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on ground moraines. The parent material consists of loess. Depth to a root restrictive layer is greater than 60 inches. **The natural Drainage class is somewhat poorly drained**. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. **Shrink-swell potential is moderate**. **This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during January, February, March, April, May.** Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 1. **This soil does not meet hydric criteria.**

Soils Information: Land Evaluation

- soils are rated and placed into groups ranging from the best to worst for crop production.
- 0-worst 100-best
- weighted average

Soils Information: Farmland Classification

- Prime
  - best for food, feed, forage and fiber & oilseed crops.
  - May be cropland, pastureland, etc. but is not urban built-up land.
  - Potential to produce high yields with minimum inputs
  - designation assigned by U.S. Department of Agriculture

Soils Information: Farmland Classification

- Important
  - Soil is ideal for agricultural practices but may not fall under all categories of “Prime” due to certain characteristics including available water capacity, ph, slope, water table, etc.

Soils Information: Farmland Classification

- Other
  - Soil that has a low productivity index.
  - In Winnebago County, this is mostly attributed to soils that have a very shallow depth to bedrock.

Both Zoning Letters (in soil description & conditions/limitations chart if present) & NRIs (always, regardless of presence or not)

Soils Information: **Hydric Soils** & Inclusions

- Seasonal high water table at or near the soil surface and/or has a high potential for flooding or ponding.
- Formed under conditions of saturation, flooding or ponding
- Supports hydrophytic (water-loving) vegetation
- Unsuitable for development

Both Zoning Letters (in soil description & conditions/limitations chart if present) & NRIs (always, regardless of presence or not)

Soils Information: Hydric Soils & **Inclusions**

- Inclusions are too small to map but may be found within a soil type as a soil component.
- It is best described as a component of soil that exhibits hydric characteristics.

Subsurface Ag Tiles

- Helps to expedite drainage
- Facilitates farming
- Should remain undisturbed
- If disturbed, may see original hydrologic conditions
- If building occurs near disturbed tile, may cause structural damage

Soil Conditions and Limitations

degree or severity of soil conditions

SOIL CONDITIONS AND DEGREE OF LIMITATIONS FOR PROPOSED USE

Soil Map Unit	Soil Name Slope ranges	Dwelling With Basement	Dwelling Without Basement	Small Commercial Building	Septic Rating	Shallow Excavation	Local Roads & Streets	Hydric Soil	Erosion & Sediment Hazard
21B	Pecatonica 2-5% slopes	Moderate 7a	Moderate 7a	Moderate 7a	Moderate 5b	Slight	Severe 7a,8,9a	NO	Moderate

Limitations

Limitations

- Frost action
- Excess humus-organic materials
- Collapsibility
- Soil is droughty
- Surface layer too sandy/clayey
- Erodes easily
- Shallow rooting abilities
- Poor filter of septic effluent
- Flooding
- Hard bedrock
- Rippable bedrock
- Seasonal wetness
- Permeability
- Steepness of slope
- Low strength for supporting loads
- Shrinking and swelling

Flooding Limitation

- The temporary covering of soil surface by flowing water from any source.
  - overflowing streams, runoff
    - Rare occurrence of flooding
    - Occasional flooding
    - Frequent flooding
    - slow runoff with ponding

Bedrock Limitation

- Solid rock present beneath any soil, sediment or other surface cover. In some locations it may be exposed at Earth's surface.

- **Hard**-Granite, basalt, quartzite and indurated limestone or sandstone
  - cemented
  - excavation difficulty
  - Some layers are **rippable** with heavy power equipment.

Depth to Seasonal Wetness Limitation

- The depth of soil above perched water
  - 0-1.5 feet below the surface
  - 1-3 feet below the surface
  - 2.5-6 feet below the surface
    - Indicates prolonged high water table
    - Limits site development
    - Limits septic suitability
    - Limits recreational uses
    - Delayed tillage

Permeability Limitation

- rate and time it takes for downward movement of water in the major soil layers when saturated, but allowed to drain freely.
  - greater than 60 minutes/inch (sands & gravels)
  - moderately slow or slow permeability
  - all layers below 24 inches, greater than 6.0 in/hr
  - underlying materials greater than 6.0 in/hr

Permeability, continued

- If the soil has high permeability the water can drain through the soil.
- if the material has low permeability the water might remain on the surface.
- septic systems- a porous permeable soil is desirable because water drains through it readily.

Steepness of slope Limitation

- influence the rate at which water flows into or off the soil.
- If unprotected, soils on slopes may erode leaving a thinner surface layer.
  - Eroded soils tend to be less fertile and have less available water than uneroded soils of the same series.

Shrink-swell potential Limitation

- changes in moisture content, the type and percentage of clay present.
- expansion and contraction
  - exerts stress on foundations, footings, and paved surfaces.
    - moderate
    - high

Low strength Limitation

The soils is not strong enough to support loads

Soils can vary from being sufficiently strong to resist all likely applied loads to being so weak that they are compacted by even light loads.

Frost action potential Limitation

- upward or lateral movement of soil by formation of ice lenses.

Frost action potential Limitation

- Frost can break large clay aggregates into smaller aggregates that are more easily transported by wind.
- Frost heaving can harm structures if improperly designed
- Frost can destroy taprooted perennial crops.

moderate potential frost action

high potential frost action

Other Limitations

- excess humus-organic materials
- unstabilized walls of cut made by earthmoving equipment may collapse
- soil is droughty
- surface layer is too clayey
- surface layer is too sandy
- erodes easily
- shallow rooting depth may limit plant growth
- poor filter of septic effluent

Soil Conditions and Limitations Ratings

Slight:

- The soil has favorable properties for the use.
- The degree of limitations is minor
- Can be overcome easily
- Good performance and low maintenance can be expected

Soils Conditions and Limitations Ratings

Moderate:

- Moderate favorable properties for the use
- Special planning, design or maintenance may be needed
- Some times of the year, expected performance is lower than desired

Soil Conditions and Limitations Ratings

Severe:

- Properties are unfavorable for use
- Generally requires major soil reclamation, special design or intensive maintenance
- Difficult and costly

Soil Conditions and Limitations Ratings

Very Severe:

- Difficult or impossible to overcome or modify the intended use

Soil Conditions and Limitations Ratings

Restrictive:

- Rapid to very rapid permeability
- Uses are generally restricted due to soil's characteristics
- Sandy or have sand and/or gravel within a depth that makes them poor filters of effluent.

Used for Septic Rating

- The results of the report in no way indicate the impossibility of a certain land use.
- it should alert the reader to possible problems that may occur if the capabilities of the land are not taken into consideration.

Septic Tank Absorption Fields

- Distribution of septic tank effluent into natural soil
- Absorption of effluent
  - Permeability
  - Depth to a seasonal high water table
  - Depth to bedrock
  - Cemented pan
  - Susceptibility to flooding
- Installation interferences
  - boulders
  - Shallow to bedrock
  - Cemented pan
- Excessive slopes may cause lateral seepage and surfacing in effluent in down slope areas

Septic Tank Absorption Fields

- Areas underlain with sand, gravel, fractured bedrock
  - Inadequate filtering
  - Increased contamination potential

Dwellings with Basements

- Single-family houses of three stories or less with basements.
- Assumed foundation of spread footings of reinforced concrete built on undisturbed soil at a depth of about seven feet.
- Based on properties affecting soil strength and settlement under a load and those that affect excavation and construction costs.
- Properties affecting soil strength and settlement:
  - high water table, flooding, shrink-swell behavior, compressibility of the soil.
- Properties influencing the ease and amount of excavation:
  - flooding, high water table, slope, depth to bedrock or cemented pan, amount of coarse fragments.

Erosion and Sediment Hazard

- based on the percent slope and the erodibility of the soil mapping unit.
- Under most conditions, establishment and maintenance of good vegetative cover is required to prevent excessive erosion and sedimentation.

Small Commercial Buildings

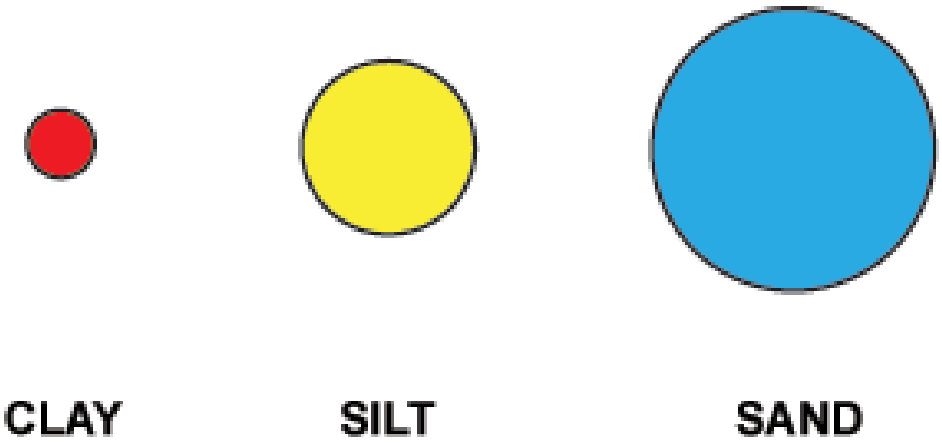
- Limitation ratings are given for undisturbed soil on which small commercial buildings of less than three stories without basements are built.
- The foundation is assumed to be spread footings of reinforced concrete
- Properties affecting soil strength and settlement:
  - Presence of a high water table, flooding, shrink-swell
- Properties influencing excavation and construction:
  - Flooding, high water table, slope, depth to bedrock, cemented pan, amount of coarse fragment

Other Soils Information

- Surface texture
- Physical soil properties
- Depth to any soil restrictive layer
- Drainage class
- Water features
- Hydrologic soil group
- Depth to water table
- Flooding/ponding frequency class

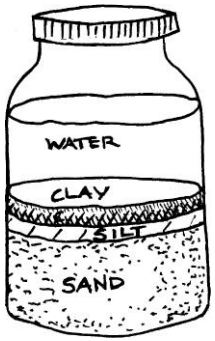
Other Soils Information

- Surface texture
  - Percentage of sand, silt and clay in the fraction of the soil



Other Soils Information

- Physical Soil Properties
  - Sand, silt, clay, organic matter, erosion factors, etc.
    - May affect soil behavior
    - Engineering and agronomic interpretations



Other Soils Information

- Depth to any soil restrictive layer
  - Restrictive layer that impedes movement of water and air through soil and restricts roots
  - Bedrock, cemented layers, dense layers

Other Soils Information

- Drainage Class
  - Frequency and duration of wet periods
  - Seven classes ranging from excessively drained or very poorly drained

Other Soils Information

- Water Features
  - Hydrologic soil groups
    - Estimates of runoff potential
    - Soils are assigned to 1 of 4 groups according to water infiltration when the soils are:
      - not protected by vegetation
      - thoroughly wet
      - receive precipitations from long-duration storms.

Other Soils Information

- Depth to Water Table
  - Water table = saturated zone in the soil
    - Occurs during specified months
    - Saturated zone that lasts for less than a month is not considered a water table

Other Soils Information

- Flooding/Frequency class
  - Flooding = temporary inundation of an area caused by overflowing streams or runoff
  - Ponding = number of times that ponding occurs over a given period

Cultural and Biological Resources

Biological Diversity

- Loss of diversity weakens natural systems
- Untapped resources
- Humans benefit from healthy ecosystems
- Natural systems are intrinsically valuable
- Streams, rivers, lakes, Nature Preserves, INPC/INAI, Forest Preserves, Park Districts, State Parks

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

EcoCAT Ecological Compliance Assessment Tool

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

OR

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

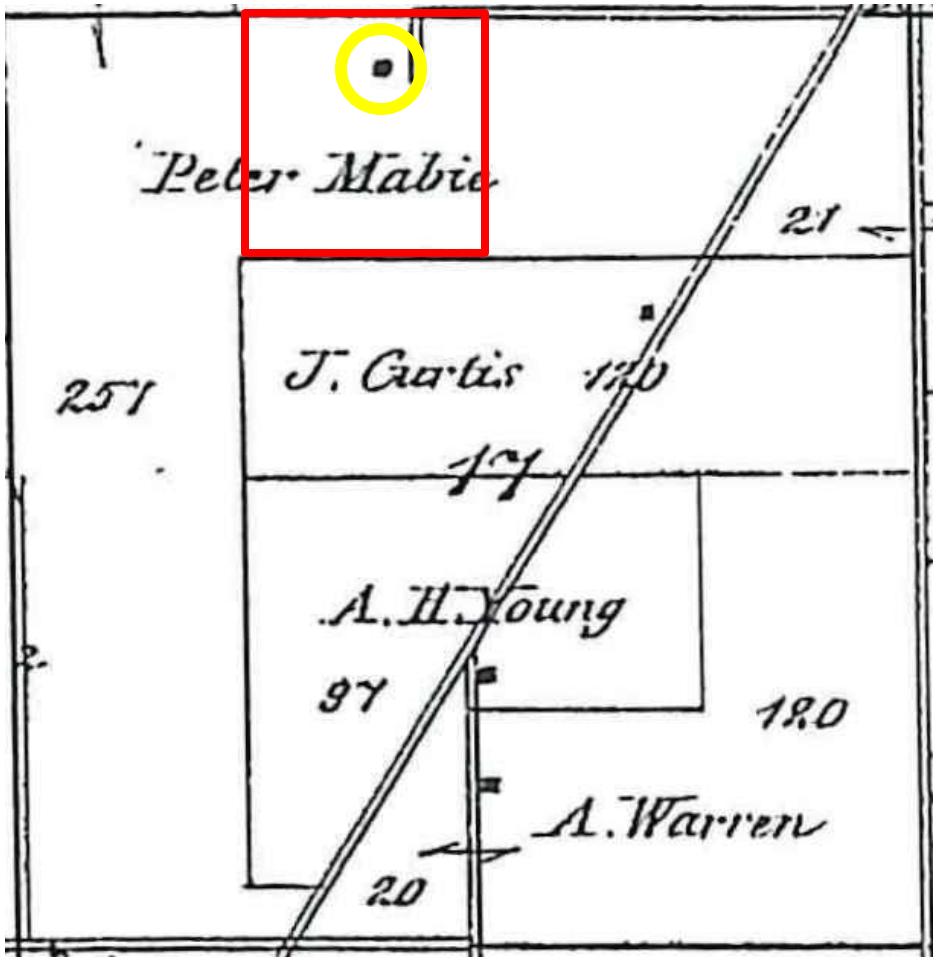
Kittentails *(Besseya bullii)*

NRIs Only

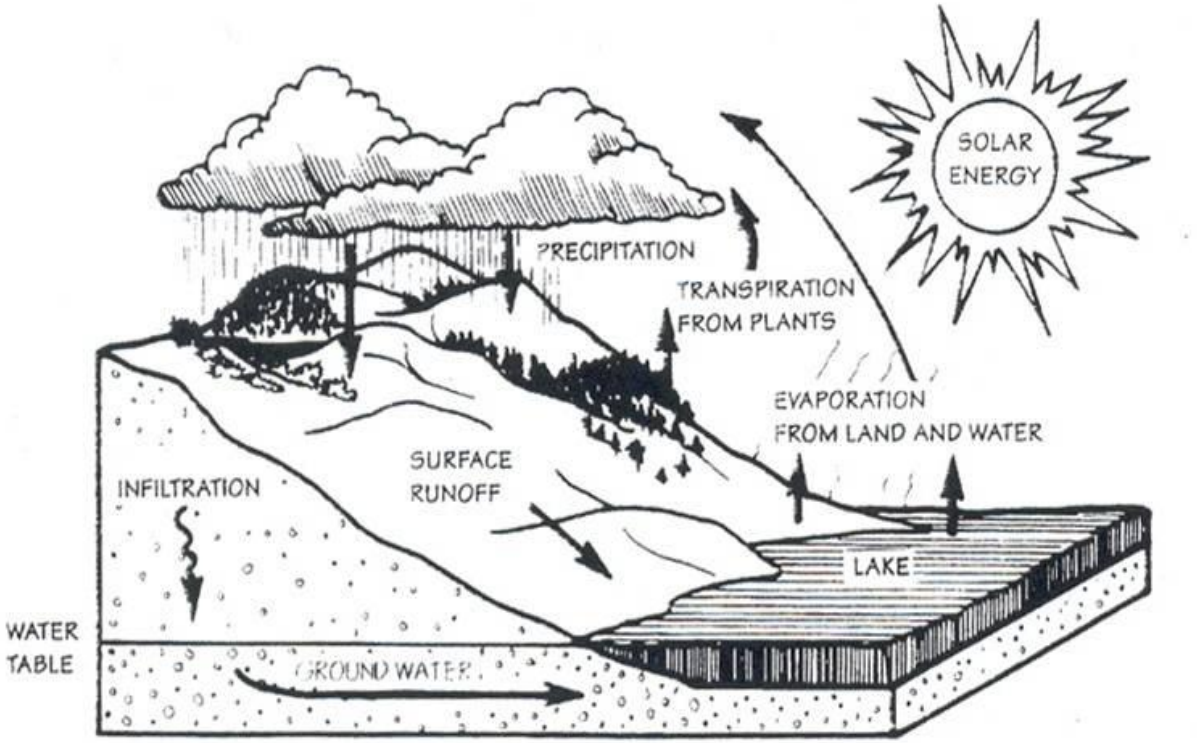
Cultural Resources

- Non-renewable; can’t replace site conditions
- Sites often extend below the soil surface
- Determined by in-office plat reviews of 1871,1886, 1905

Cultural Resources



Watershed Impacts



Changes occur to a watershed as an undeveloped landscape becomes more urbanized.

Watershed Impacts

- As Urbanization increases, so does runoff.
- If water does not becomes absorbed in soil, it runs across the surface.
- This leads to flooding, not to mention that harmful pollutants do not become naturally filtered before they enter stormwater systems or streams and lakes.

Watershed Impacts

Effects of increased volume of runoff:

- Increase in magnitude and frequency of severe floods
- Increase in frequently of erosive bank full floods
- Less annual runoff volume as storm flow
- More rapid stream water velocities
- Groundwater recharge may be significantly reduced.
- Watershed system becomes impaired an degraded.

Floodplains

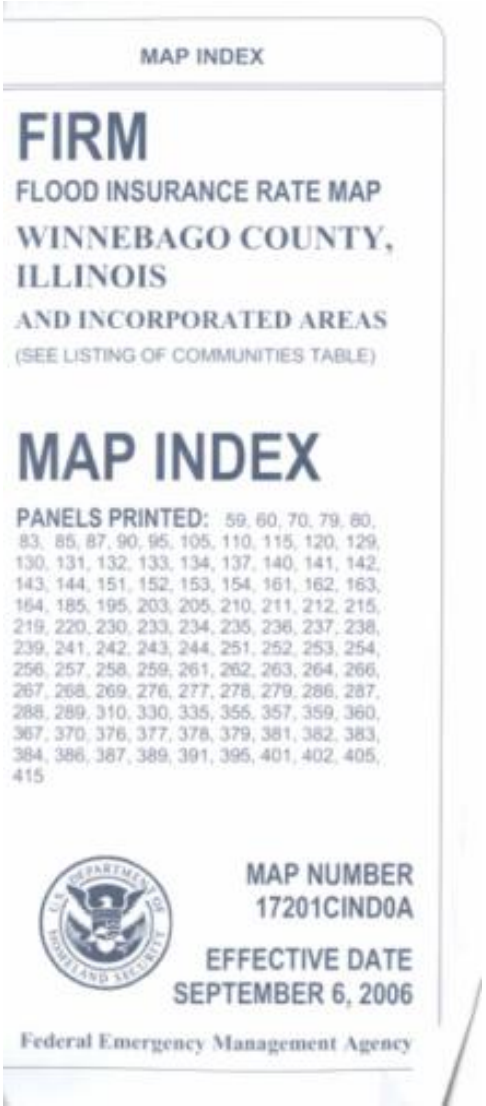
- lands adjacent to steams, rivers and lakes that are immersed when flooding occurs.

- Carry large amounts of water

- Floodplains are vital to natural flooding processes

- Unwise development in floodplains increases property damage and potential loss of life from flooding.

Floodplain


MAP INDEX

FIRM

FLOOD INSURANCE RATE MAP

WINNEBAGO COUNTY, ILLINOIS

AND INCORPORATED AREAS

(SEE LISTING OF COMMUNITIES TABLE)

MAP INDEX

PANELS PRINTED: 59, 60, 70, 79, 80, 83, 85, 87, 90, 95, 105, 110, 115, 120, 129, 130, 131, 132, 133, 134, 137, 140, 141, 142, 143, 144, 151, 152, 153, 154, 161, 162, 163, 164, 185, 195, 203, 205, 210, 211, 212, 215, 219, 220, 230, 233, 234, 235, 236, 237, 238, 239, 241, 242, 243, 244, 251, 252, 253, 254, 256, 257, 258, 259, 261, 262, 263, 264, 266, 267, 268, 269, 276, 277, 278, 279, 286, 287, 288, 289, 310, 330, 335, 355, 357, 359, 360, 367, 370, 376, 377, 378, 379, 381, 382, 383, 384, 386, 387, 389, 391, 395, 401, 402, 405, 415

MAP NUMBER 17201CIND0A

EFFECTIVE DATE SEPTEMBER 6, 2006

Federal Emergency Management Agency

Flood Insurance Rate Map (FIRM):

Produced by the Federal Emergency Management Agency and defines floodplains

Flood Insurance Rate Map

Flood Insurance Rate Map:

A is the zone of 100 year flood. Areas subject to inundation by the 1-percent-annual-chance flood event.

AE is the A zone with Base Flood Elevations Determined.

Zone X is the 100 to 500 year flood or areas outside the 500 year floodplain

Wetlands

- wet soils (hydric & hydric inclusions)
- will support a dominance of water tolerant plants known as hydrophytic plants.
- Usually wooded or uncropped areas
- uncropped wet spot in a cropped field

Wetlands

- catches sediment, nutrients, and pesticides that are carried by runoff water.
- Filters water
- vegetation uses the nutrients and removes many of the pesticides from runoff.
- Improves water quality

Wetlands

- Flood protection
- Reduce downstream flooding
- Migrating waterfowl use wetland for food, cover & nesting habitat, along with other game and non-game wildlife.

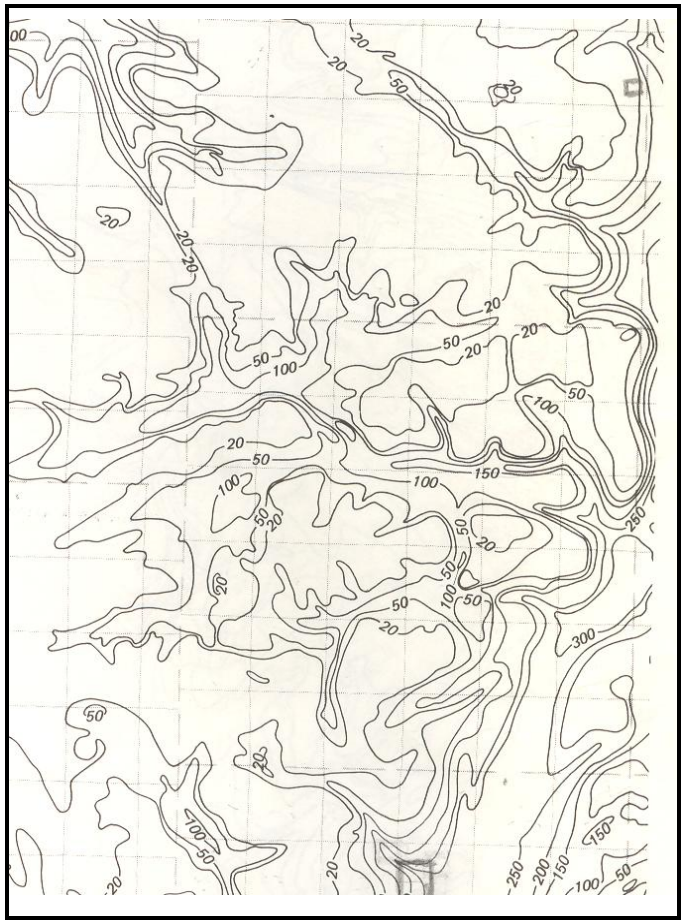
Geologic Information

- Geological information to a Depth of 20 feet
- Drift thickness, interpreted as depth to bedrock
- Parent material

SOURCE: “Geology for Planning in Boone and Winnebago Counties”

1984 & Illinois State Geological Survey Circ. 531

Geologic Information



Determines generalizations about the potential for groundwater contamination, development potential, groundwater recharge, etc.

Glossary and References

- Comprehensive list of technical terms and their definitions.

- Also included are agencies involved in the natural resource investigation process.

Field Inspection

- Ground truth report findings
- Photos
- Inspect unique attributes
  - Wetlands, drainage, surrounding land use

Validity of Reports

- SWCD Zoning Reports are valid for up to 5 years.
- If a new petition arises including the same acreage and a report has been done within 5 years, SWCD Office will contact Zoning Dept. to verify via email/pdf copy of report and confirm the old report remains applicable.
- If beyond 5 years, a new report will have to be done.

Application Process

- Application can be obtained from:
  - www.winnebagoswcd.org
  - Office: 4833 Owen Center Road, Rockford
  - Email: jessica-ra-swcd@comcast.net
  - Call: 815-965-2392 ext. 3

Application Process

- What we ask for…
  - who is the customer filing with?
  - Location of property (address, PIN, Township, Section)
  - Acreage of property
  - Current zoning
  - Project or subdivision name
  - Surrounding land use
  - name & address of owner
  - name & address of applicant
  - name & phone # of contact
  - type of request (change in zoning, variance or SUP)
  - existing/proposed land use
  - Date of public hearing
  - Water supply/wastewater treatment
  - What the proposed land use will include (septic, dwelling with & without basements, small commercial buildings)
  - maps should be included if applicable.

Application Process

- Once our office obtains the completed application **and fee**, we then begin the report.
  - Completion may require 30 days as allowed under State Law.

Application Fees

- Zoning Letters
  - $75.00
- N.R.I Reports
  - $400.00 for 0-5 acres
  - $20/acre for every acre over 5 ac.

- Winnebago County SWCD fee determinations are final. Reports will not be completed without payment.

Application Fees

- We accept payment the following ways:
  - Cash
  - Check (made payable to):
    - Winnebago County SWCD
  - Credit Card (Illinois Epay through the SWCD Website at www.winnebagoswcd.org

- A returned check fee of $25 will be charged for each returned check

DIRECT QUESTIONS TO: Jessica R. Cocroft

Resource Analyst
Winnebago County Soil and Water Conservation District
4833 Owen Center Road
Rockford, IL 61101

Phone: 815-965-2392 ext. 3
Fax: 815-965-2447
jessica-ra-swcd@comcast.net
www.winnebagoswcd.org
Monday-Friday 8am-4:30pm