

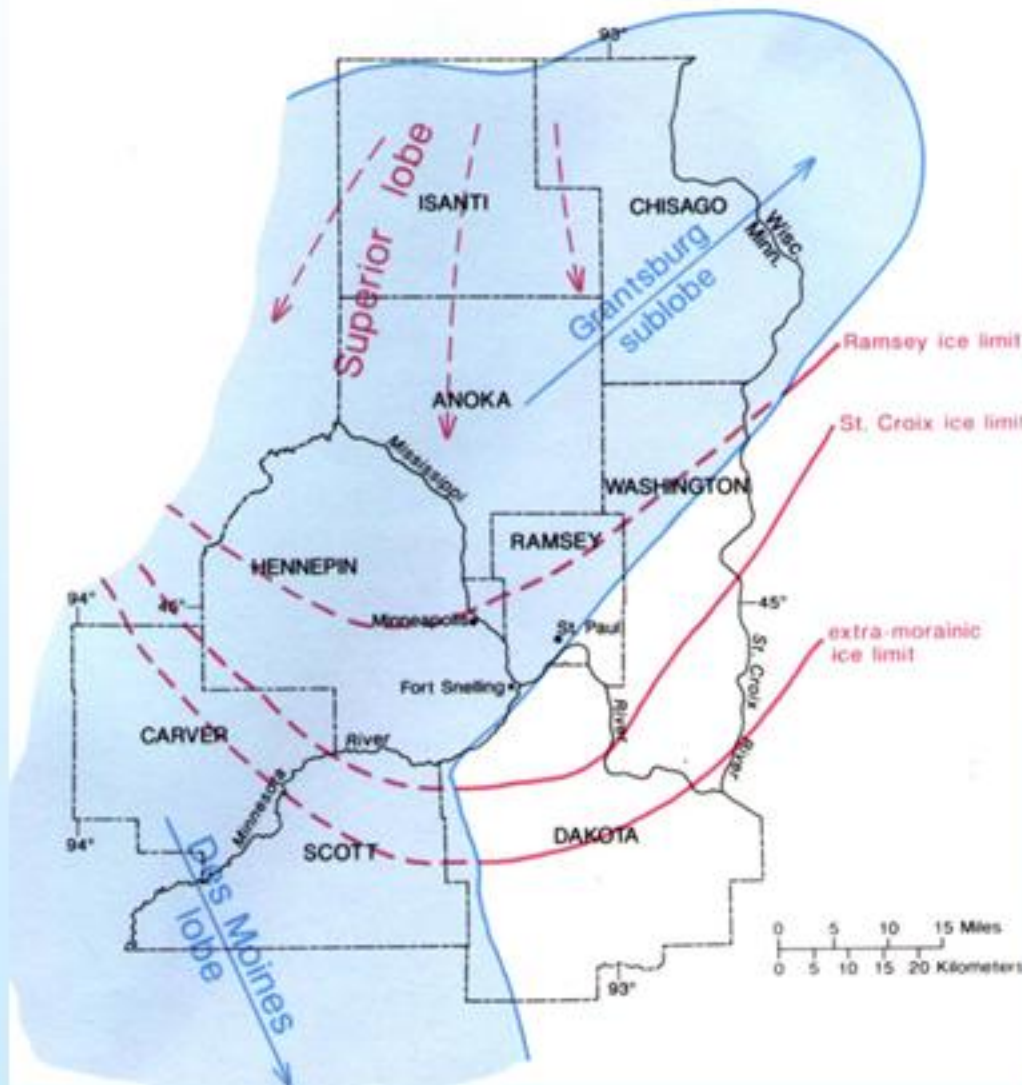
Stormwater Infiltration and Groundwater Pollution Sensitivity

MGWA Fall Conference
November 2006

Stu Grubb, PG



Washington County Geology



- St. Peter, PDC or FIG bedrock
- Superior lobe – St. Croix Moraine and outwash
- Des Moines lobe and outwash

Pollution Prevention



- **Pre-treatment of stormwater**
- **Monitoring data**
- **No ground water quality issues**

Design Considerations

- **Sandy soils, high permeability**
- **Separation from water table**
- **Groundwater mounding**
- **Confining layer above drinking water aquifer**
- **Pretreatment of stormwater**
- **Avoid potential “hot spots”**
 - **Karst**
 - **Possible chemical spills**

Stormwater Infiltration Practices

- Underground storage and infiltration



Stormwater Infiltration Practices



Sheep Pasture

U of M – St. Paul Campus

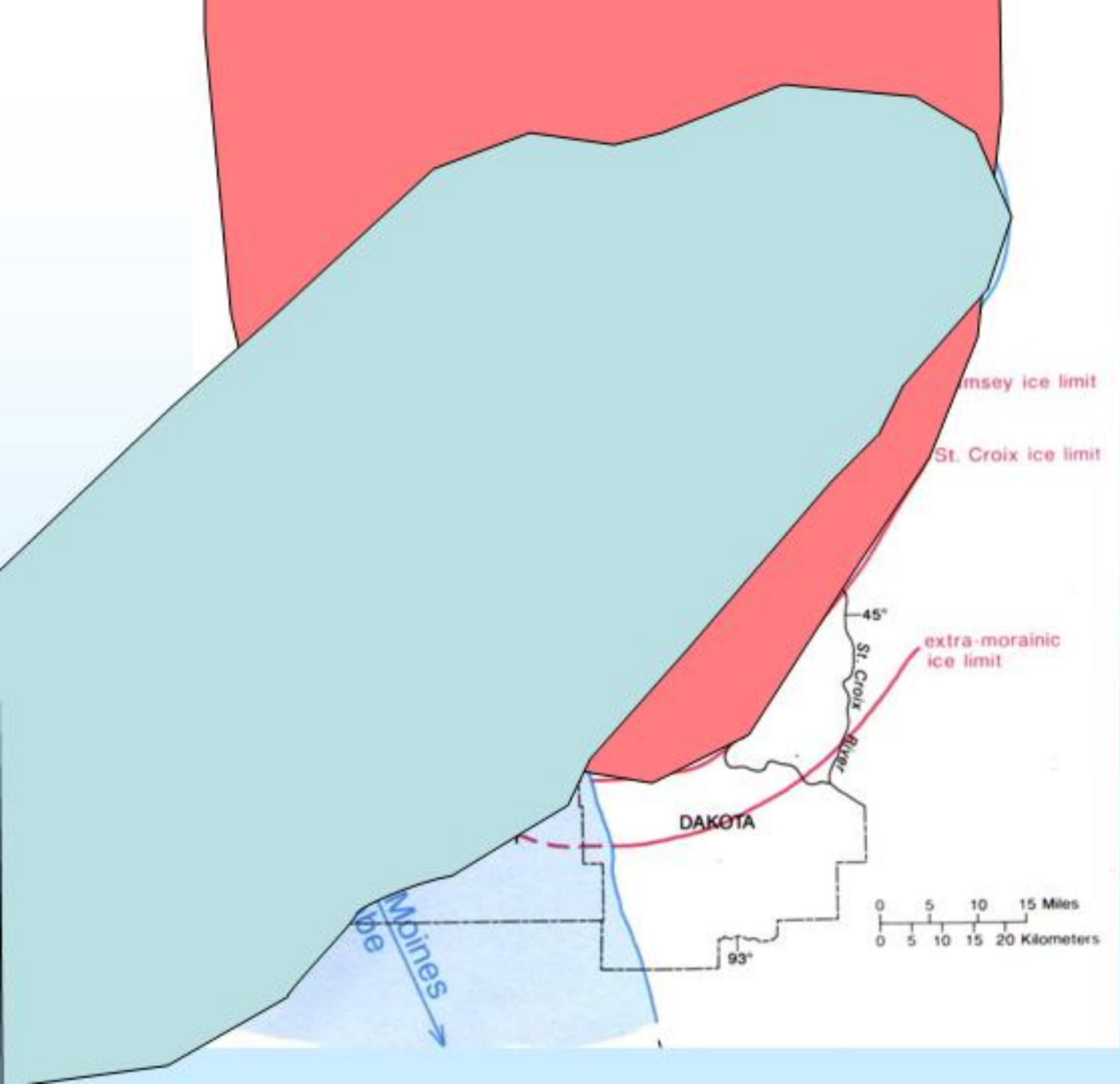
Stormwater Infiltration Practices

- Infiltration basins or rain gardens



Hugo, Minnesota City Hall

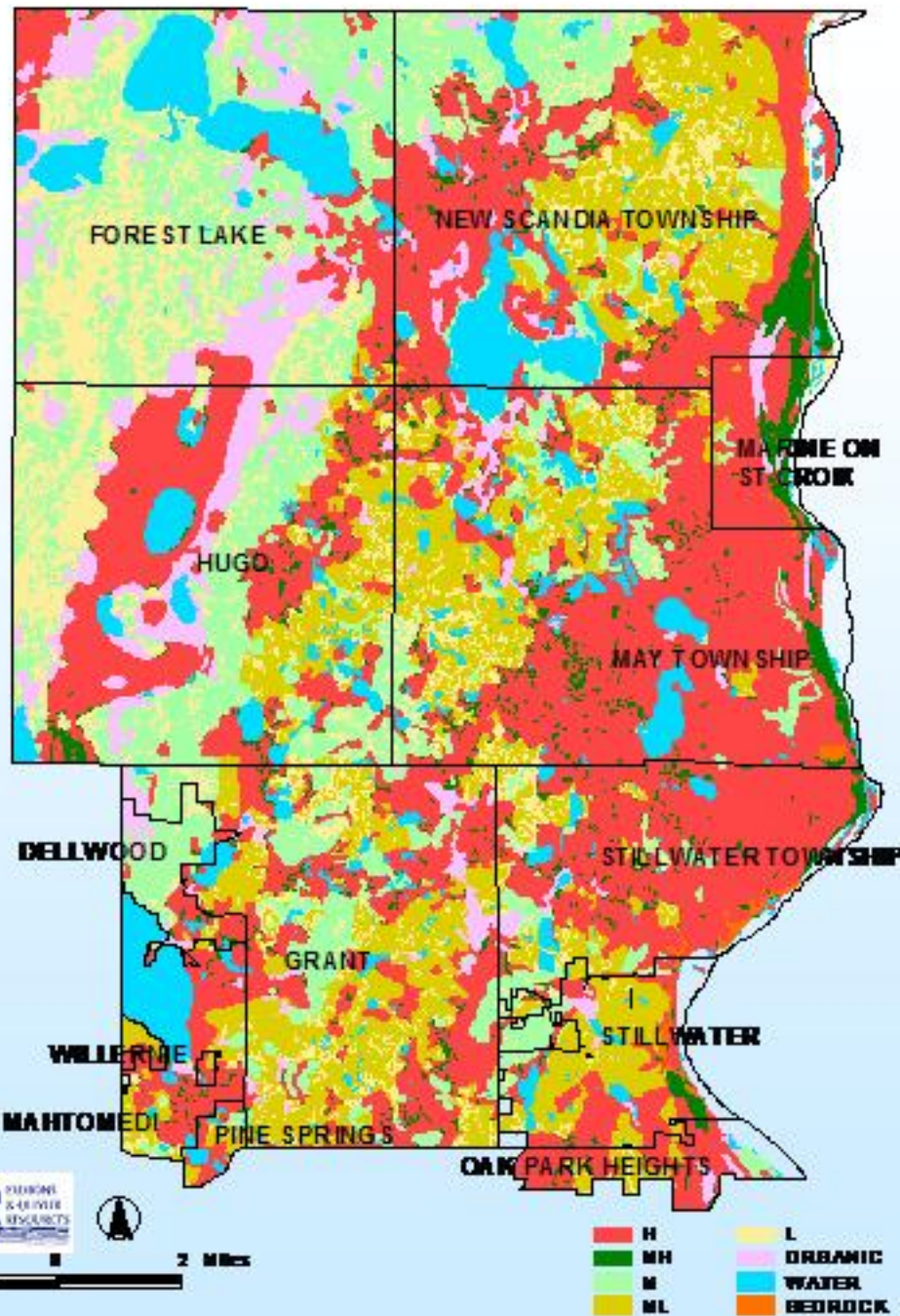
- **Stormwater infiltration practices**
- **Design considerations related to groundwater pollution**
- **Infiltration mapping**
- **Compare pollution sensitivity and infiltration mapping**



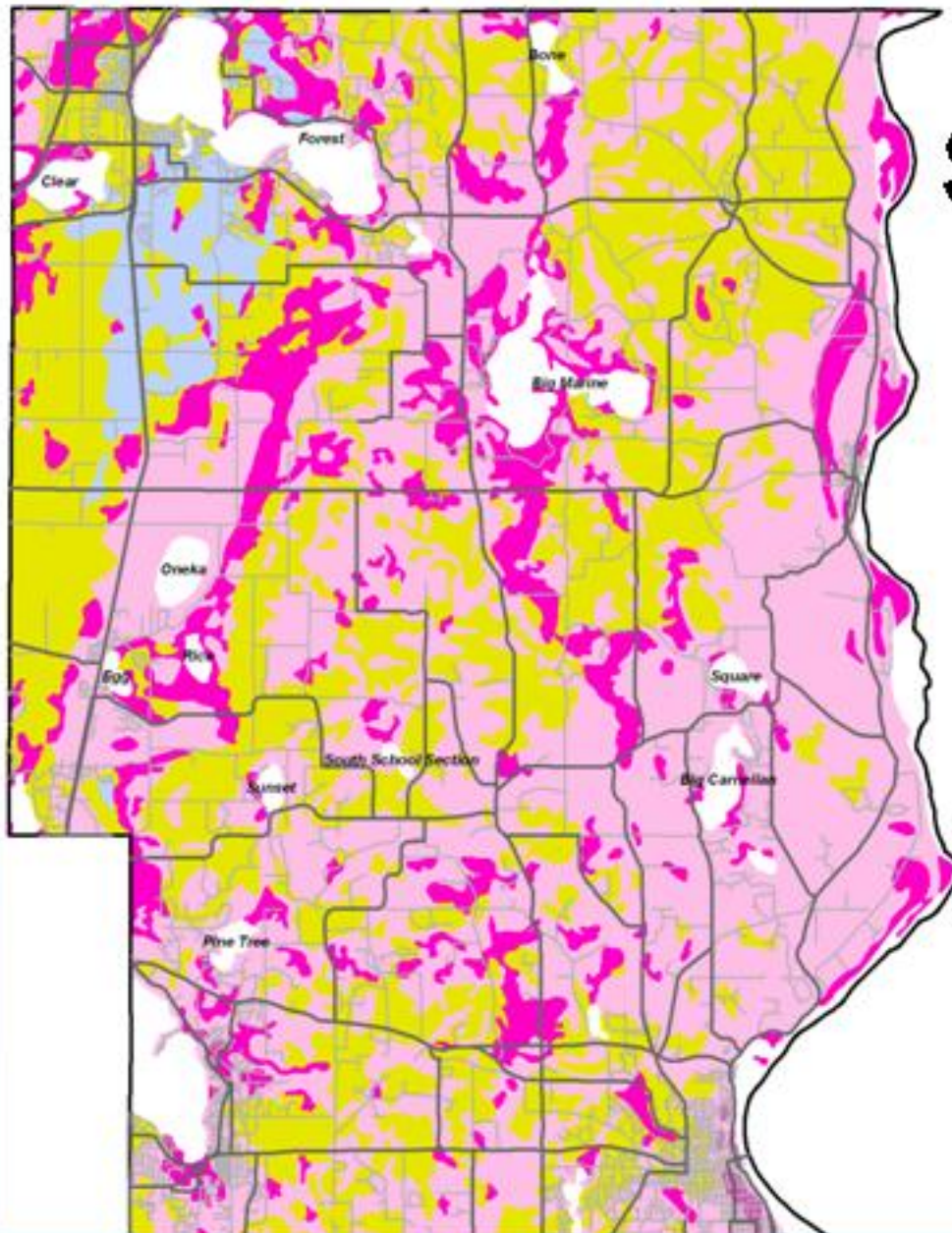


Infiltration Potential Map

- Will stormwater infiltration practices work?
- Sand content/Surficial geology
- Soil types



Pollution Sensitivity Map – Water Table

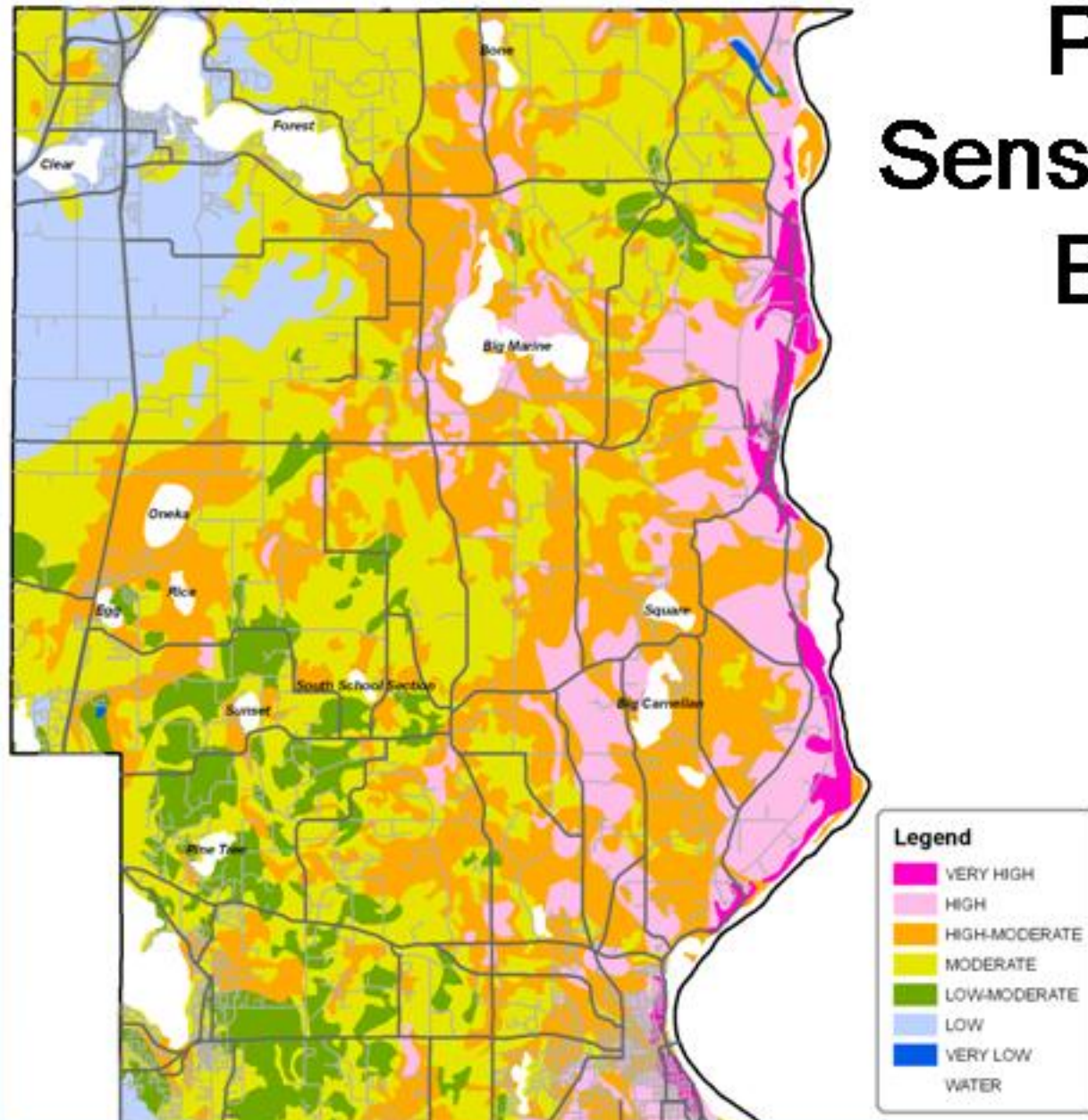


Legend

- VERY HIGH
- HIGH
- HIGH-MODERATE
- MODERATE
- LOW
- WATER

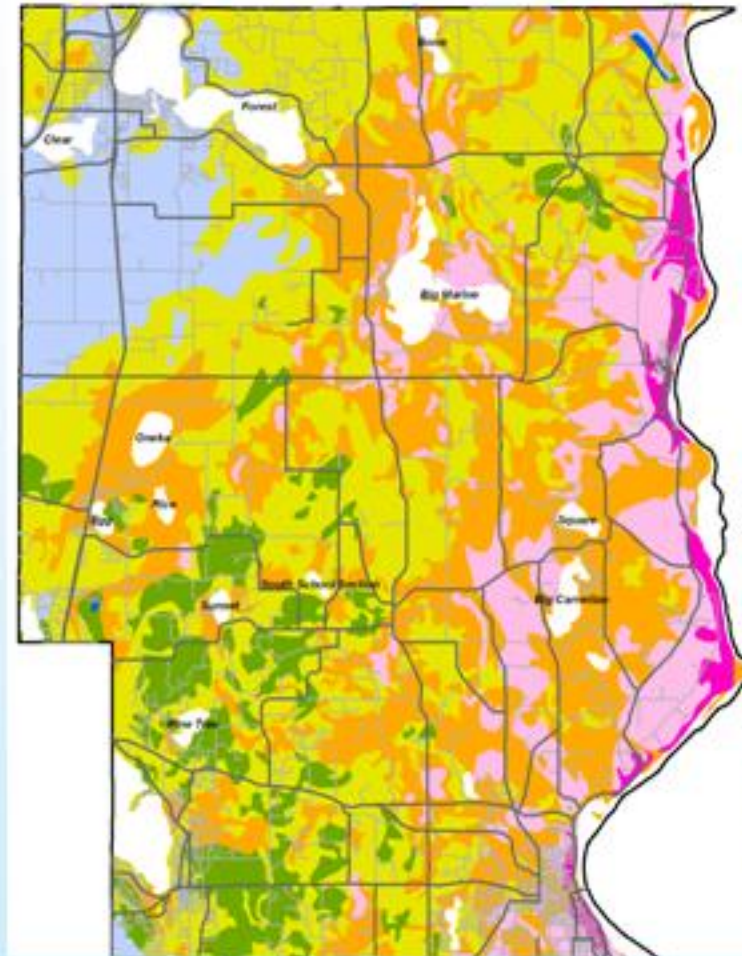
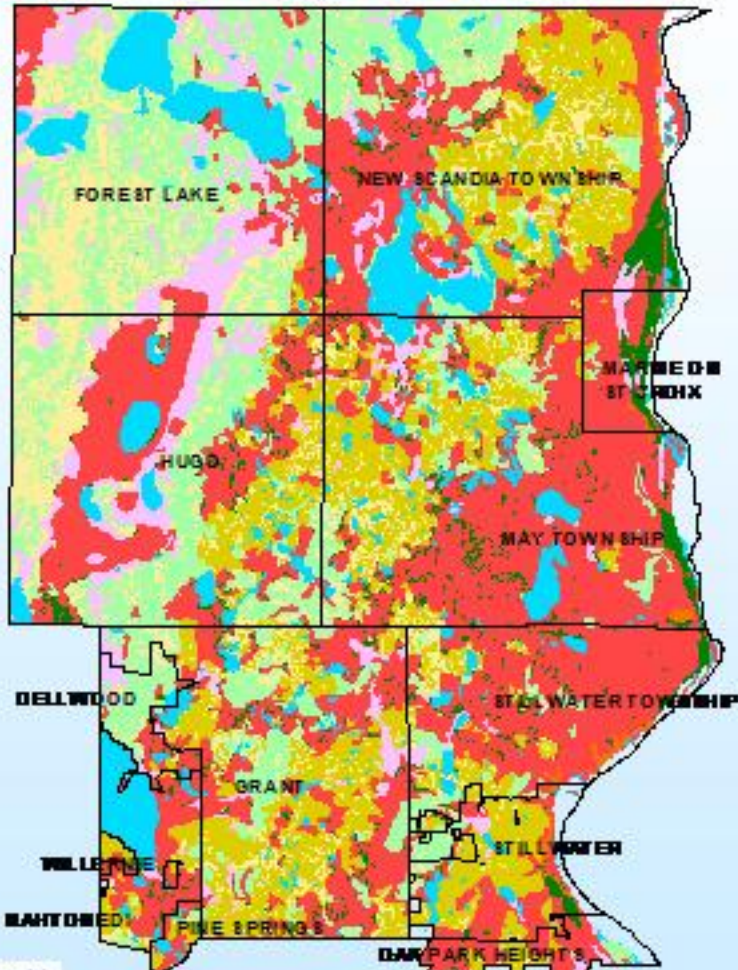
- Sand content/
Surficial
geology
- Depth
to water
table

Pollution Sensitivity Map - Bedrock



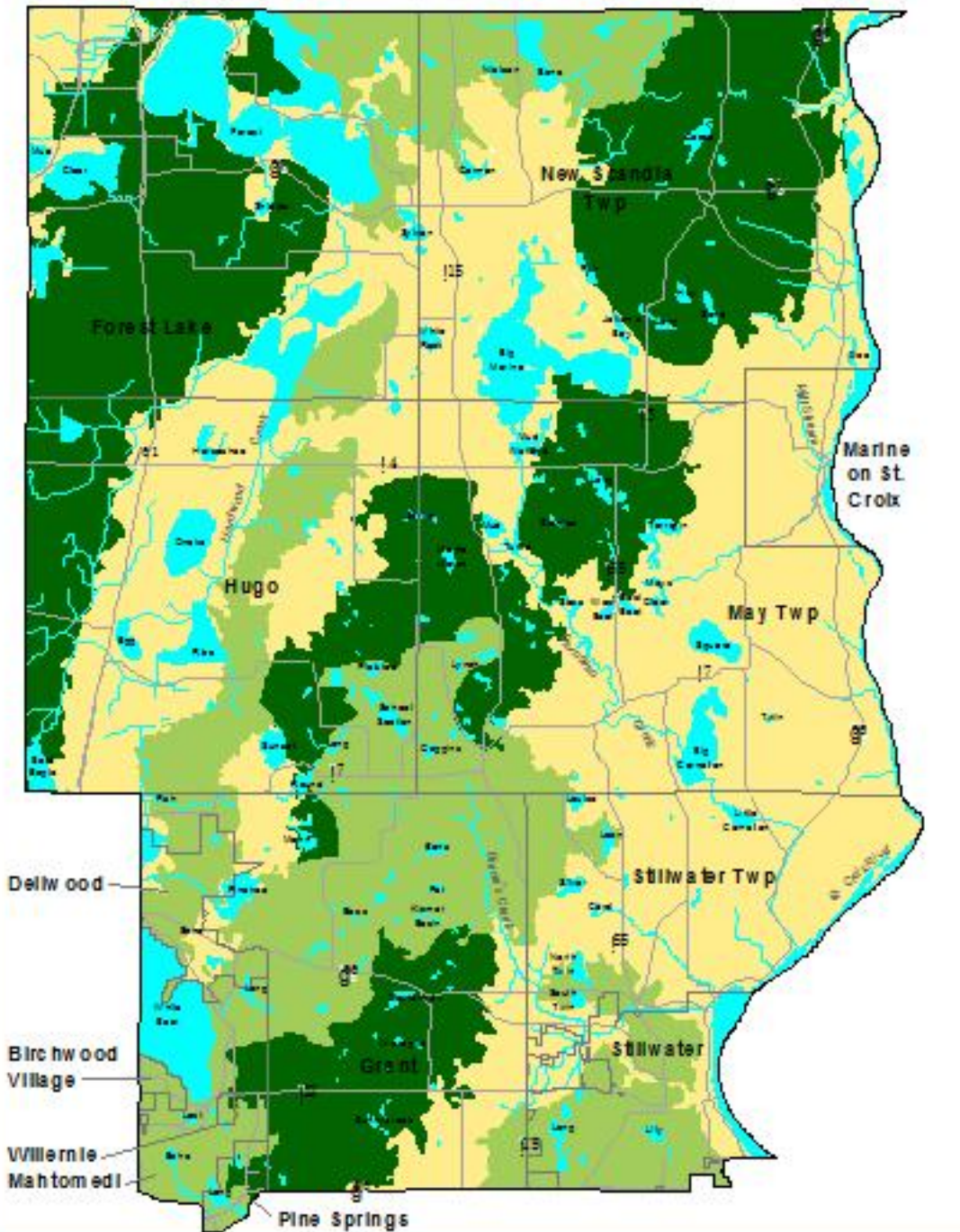
- Sand content/Surficial geology
- Depth to bedrock
- Bedrock confining layers (None in area shown)

Comparison



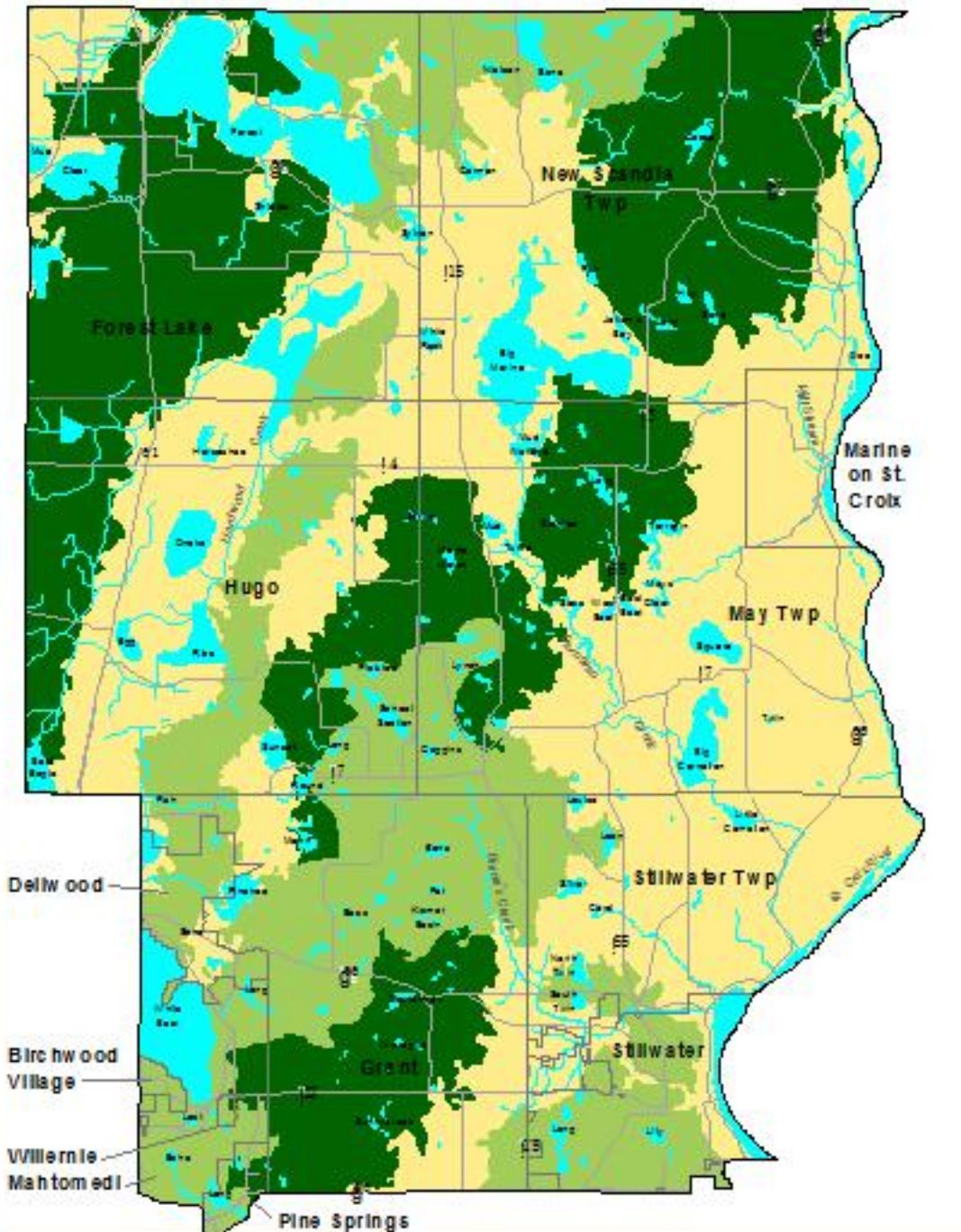
Groundwater Management Zones

- Consolidated areas
- Till confining layers above bedrock
- Regional management tool

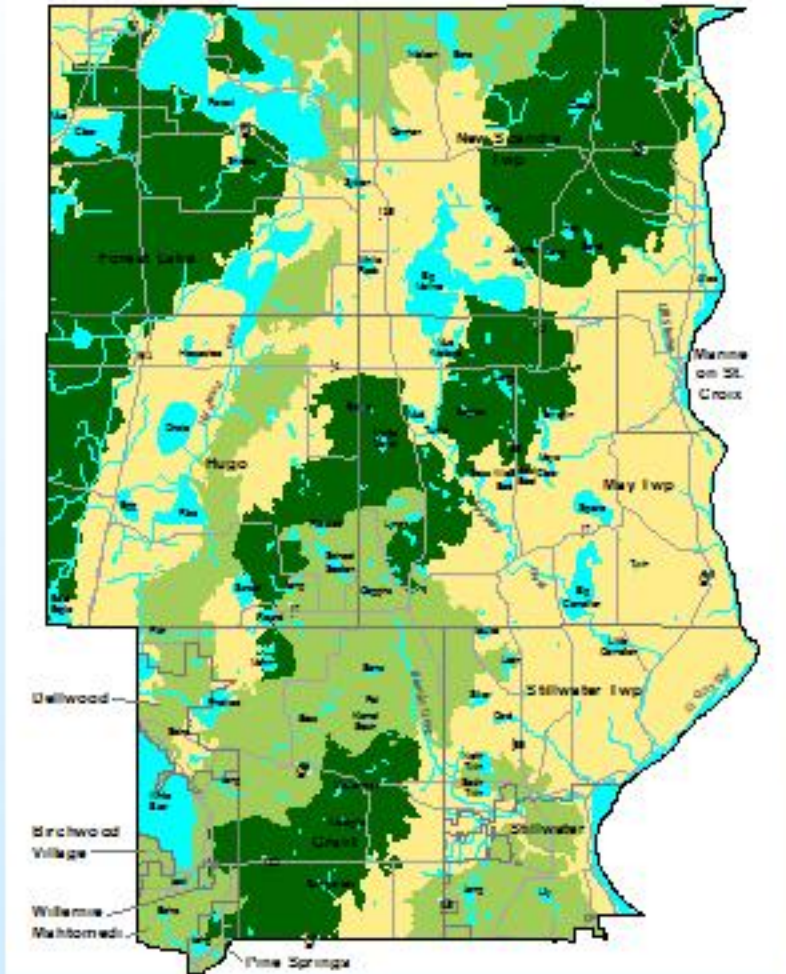


Groundwater Management Zones

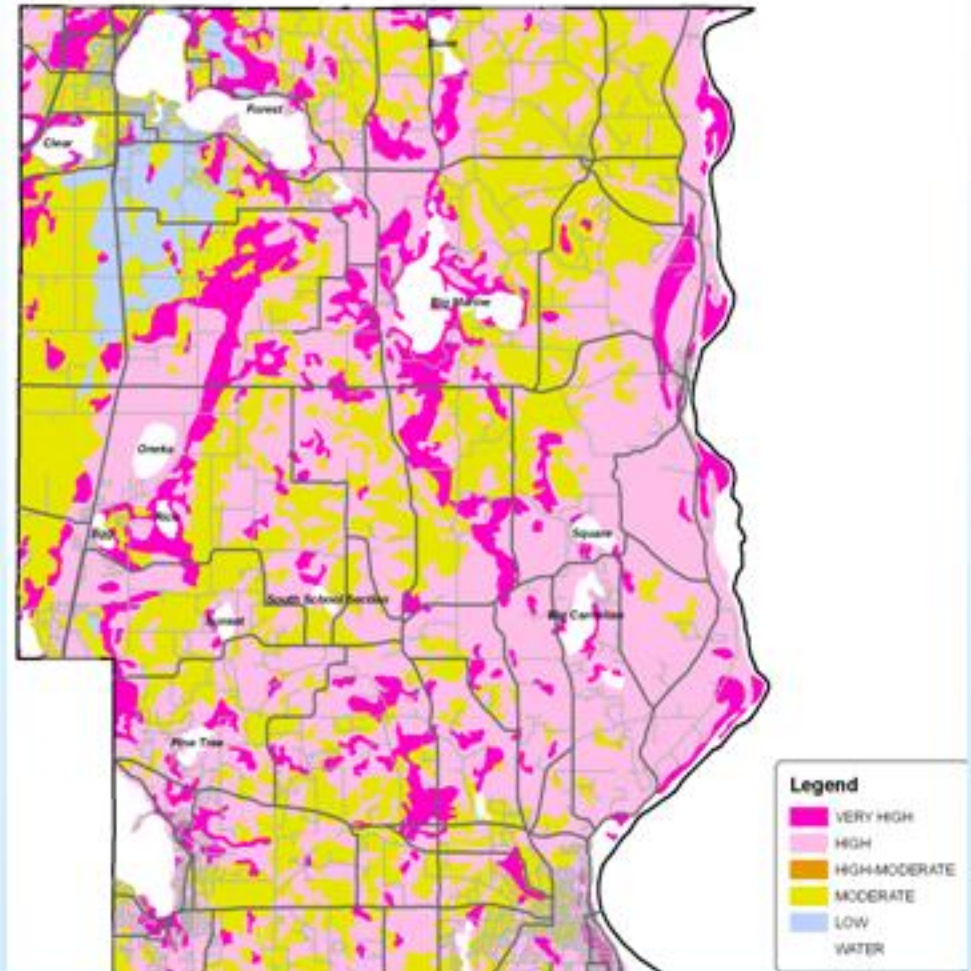
- 1. Critical Impact Zone – Pretreatment required**
- 2. Impact Zone**
- 3. Protection Zone – Less infiltration potential**



Comparison

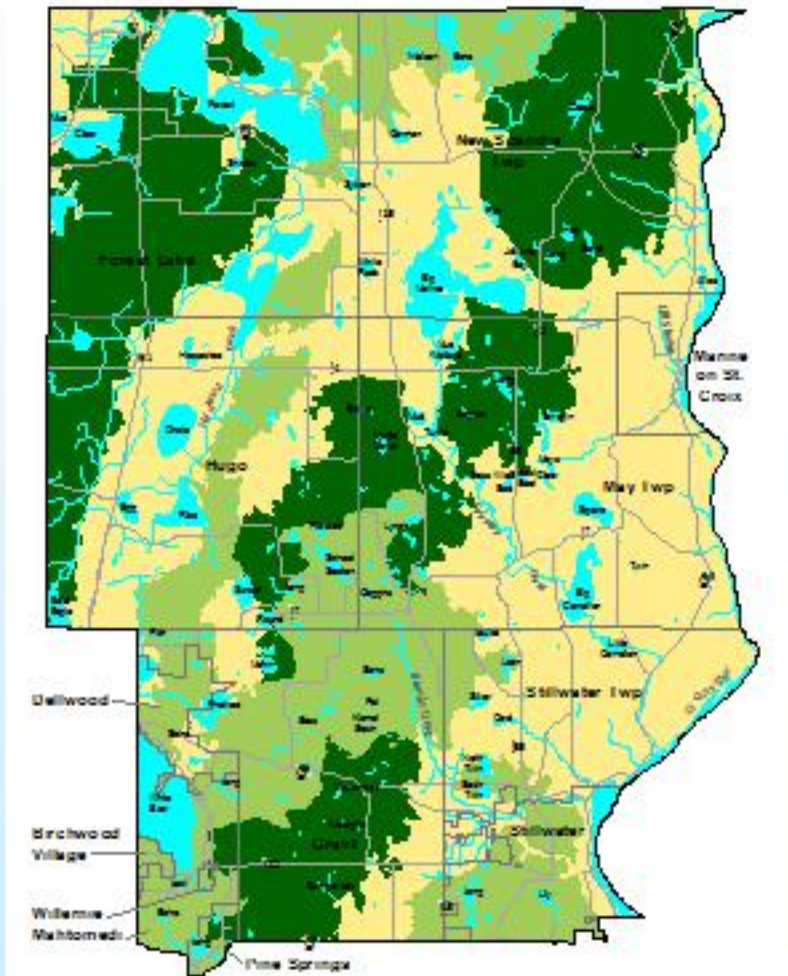


Groundwater Management Zones

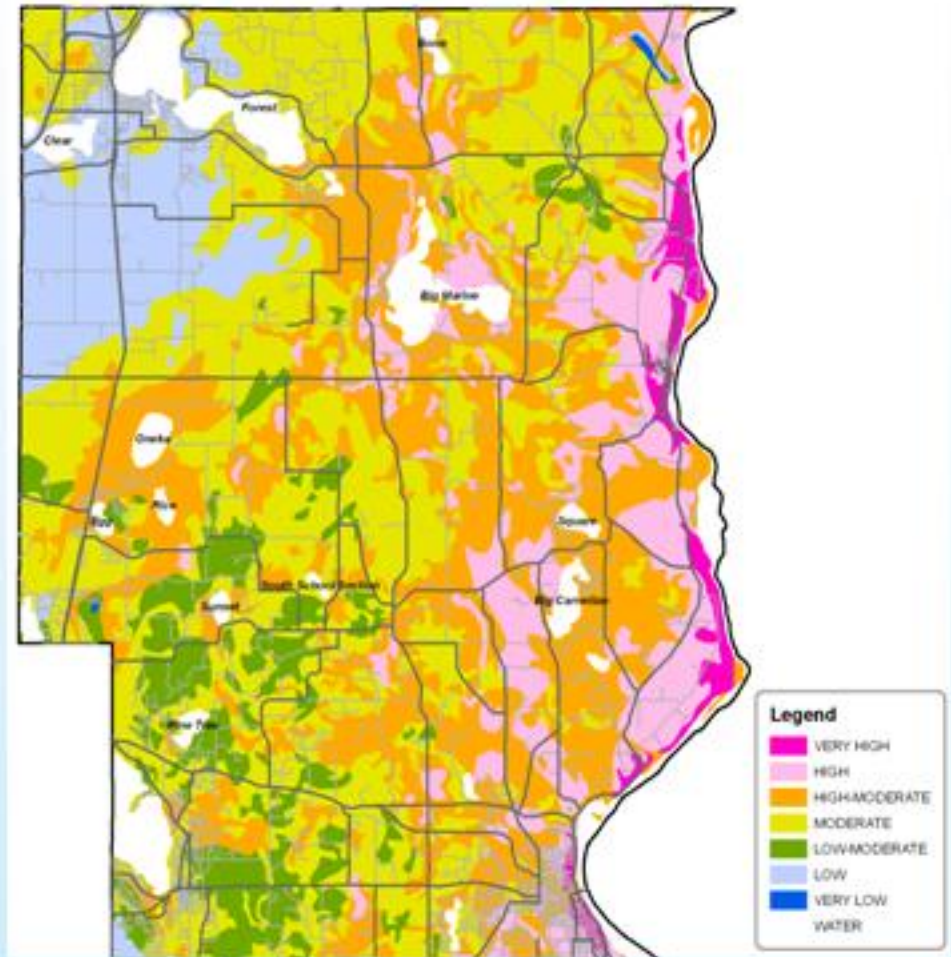


Pollution Sensitivity – Water Table

Comparison



Groundwater Management Zones



Pollution Sensitivity – Bedrock

Conclusions

- **Many different customized maps can be created from the same data**
- **Understand how and why maps were created**
- **Appropriate use of data?**