

# INTENSIFIED TILE DRAINAGE EVALUATION

Shawn Schottler, Science Museum of MN, St Croix Watershed Research Station

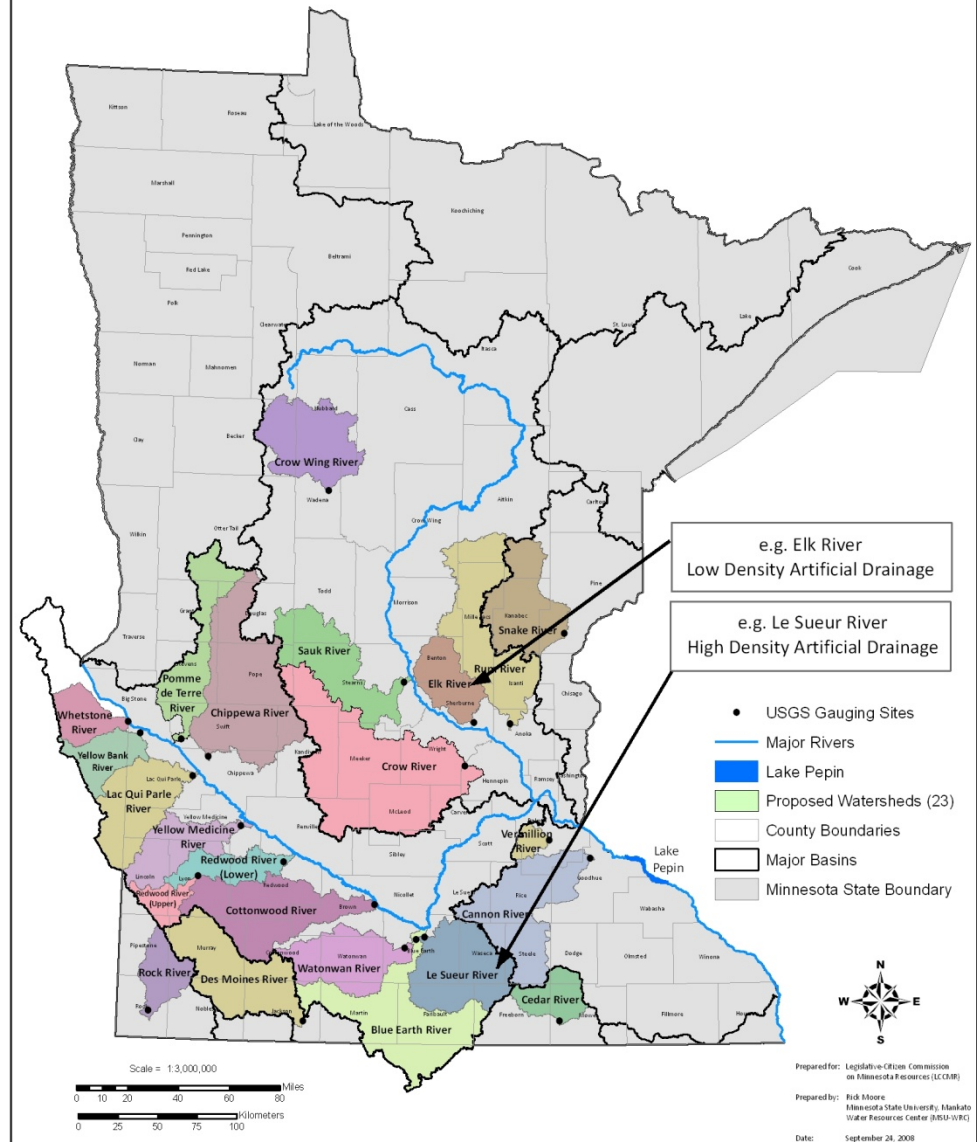
Rick Moore, MN State University – Mankato, Water Resources Center

Drainage Work Group Meeting – July 29, 2009

# PROPOSED AREA

- ✘ 23 Watersheds
- ✘ Low and High Density Artificial Drainage
- ✘ Contribute hydrology to Lake Pepin
- ✘ Mississippi River Watershed

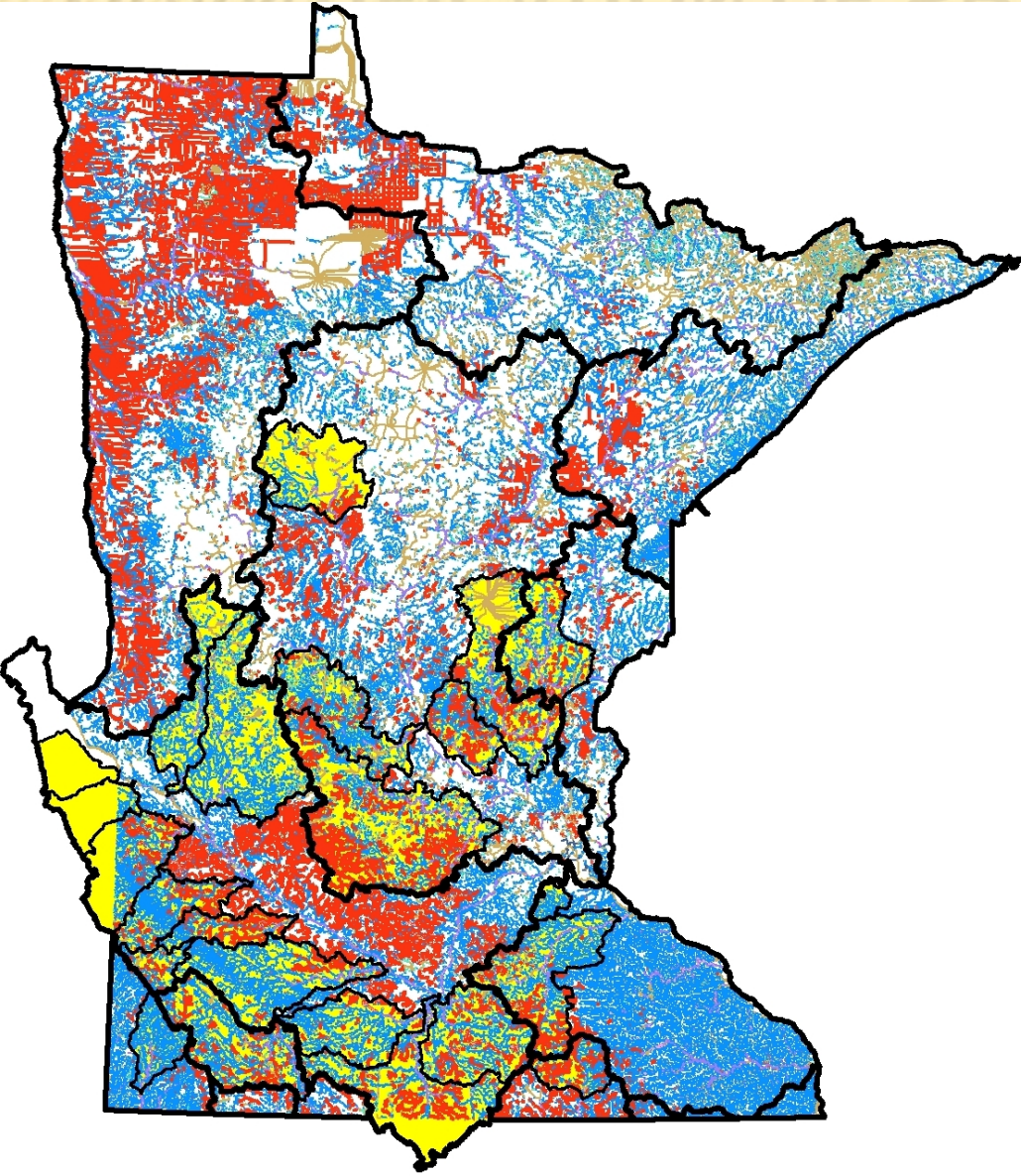
## Proposed Watersheds for Comparative Assessment



# QUANTIFICATION OF SPATIAL EXTENT

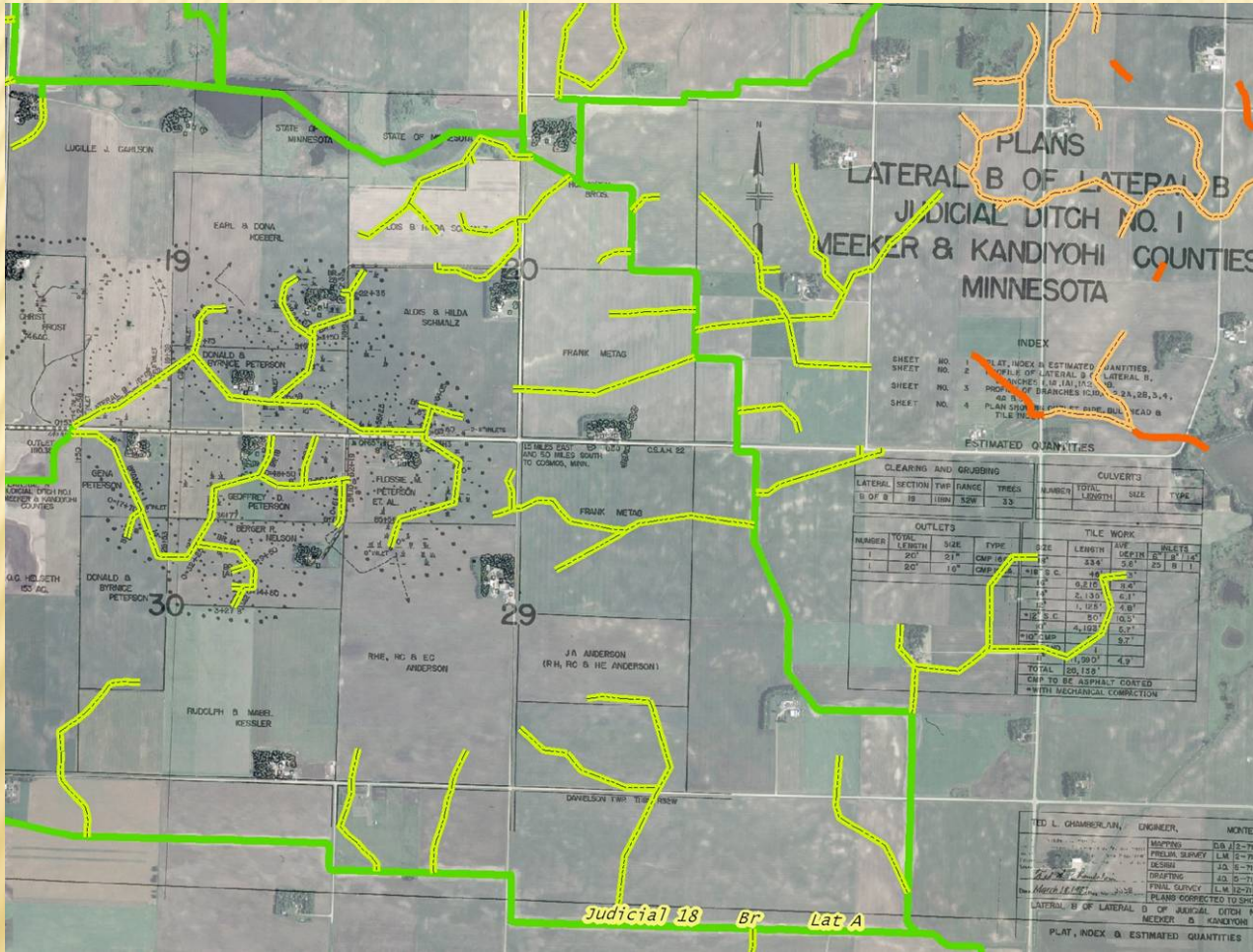
- ✘ Judicial Ditch Density Inventory
  - + Natural Hydrology versus Engineered Hydrology
  - + Spatial Extent of Natural Hydrology
  - + Spatial Extent of Engineered Hydrology
- ✘ Surface Riser Density Inventory
- ✘ Drainage Tile Outlet Inventory
- ✘ Density of Pattern Tiling

# QUANTIFICATION OF SPATIAL EXTENT



- ✘ Judicial Ditch Density Inventory
- ✘ Surface Drainage Analysis
- ✘ Natural Hydrology
- ✘ Engineered Hydrology

# QUANTIFICATION OF SPATIAL EXTENT



- ✗ Judicial Ditch Density Inventory
- ✗ Surface Drainage Analysis
- ✗ Natural Hydrology
- ✗ Engineered Hydrology

# QUANTIFICATION OF SPATIAL EXTENT



- ✘ Surface Riser  
Density Inventory
- ✘ Random  
Sampling
- ✘ Roadside  
Sample



# QUANTIFICATION OF SPATIAL EXTENT



- ✘ Drainage Tile Outlet Inventory
- ✘ Random Sampling
- ✘ Roadside Sample

# QUANTIFICATION OF SPATIAL EXTENT



- ✘ Leaf-off Aerial Photography
- ✘ Dry Soils
- ✘ Wet Soils
- ✘ Feature Analysis of Tile Lines



# QUANTIFICATION OF TEMPORAL EXTENT

- ✘ Historic Aerial Photography
- ✘ Farm Records
- ✘ Production Records and other historical Informaton

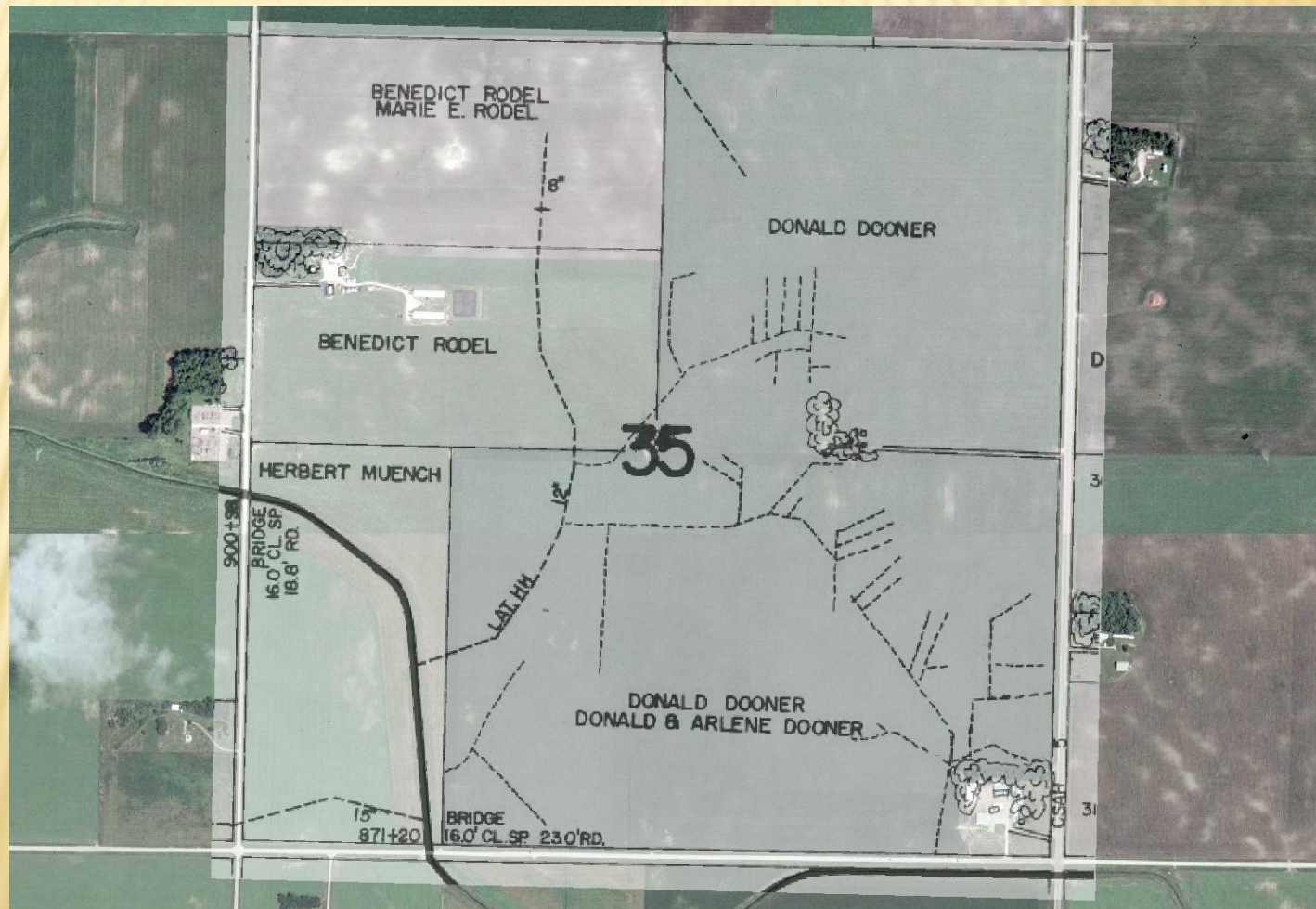
# QUANTIFICATION OF TEMPORAL EXTENT

## ✘ Historical Aerial Photography



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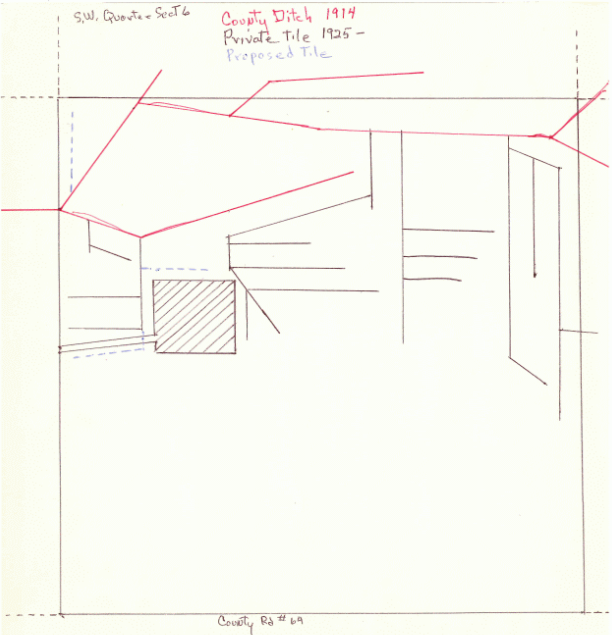


# QUANTIFICATION OF TEMPORAL EXTENT

✘ Farm Records, Production Records and other historical information

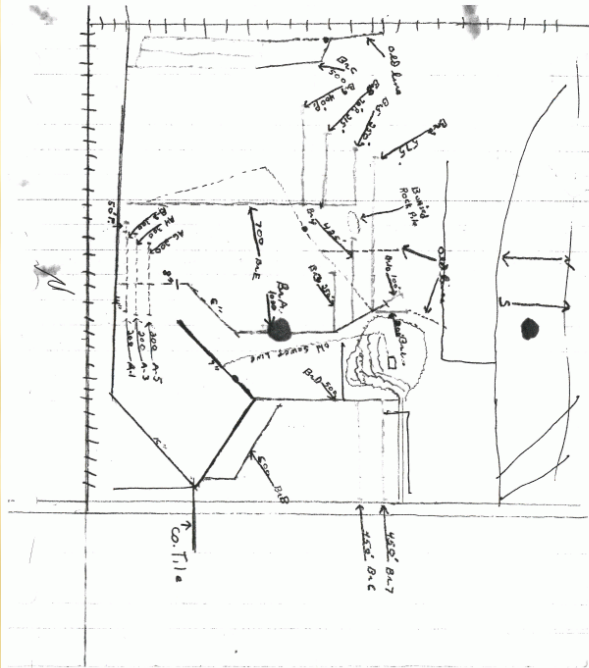
Tile Map

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