

# Water Infrastructure Challenges

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Public Works Director



*A leading community in which to live, work and thrive.*

# Who Is This Guy?

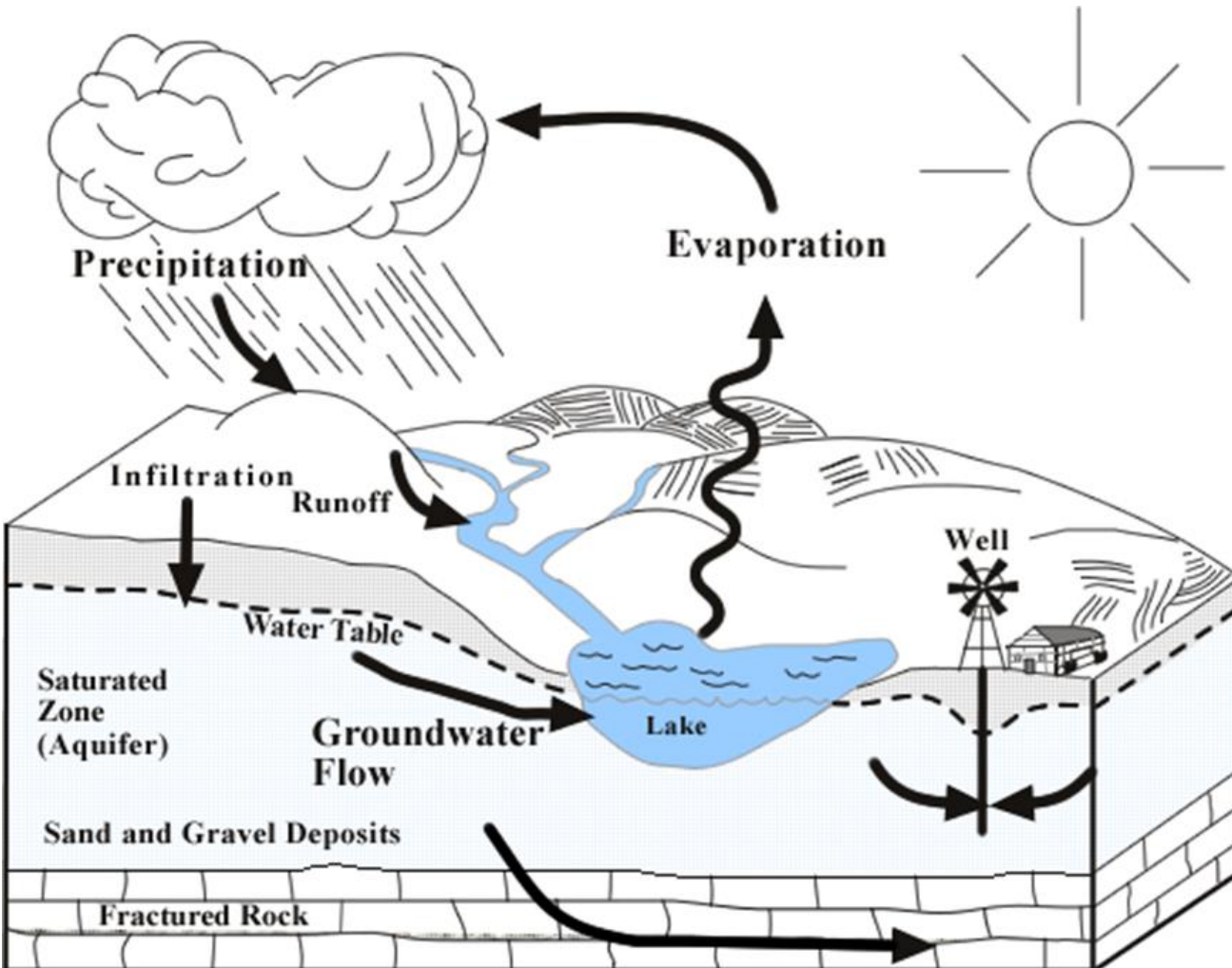


- ❖ 31 years working for cities
- ❖ Served on APWA Executive committee
- ❖ Past President of City Engineer's Asc Mn
- ❖ DNR "Friend of the Environment"
- ❖ Served on Water Governance study
- ❖ Served on Water Sustainability Framework
- ❖ Water pragmatism

# We All Care About Water



Two major challenges:  
Groundwater and surface water



# Many Goals and Issues



Citizens  
pollution  
Watersheds flooding  
USEPA stream Reuse MCSC wetland  
Maintenance groundwater trout surface  
storage river  
MDH  
ground LID aquatic lakes pond  
drinking  
drought LWC fen cities planning  
Atlas BWSR DNR BMP Storm precipitation  
sustainability  
aquifer Stormwater potable  
MPCA rainfall utilities  
met-council water

# Regulatory Challenges



- ❖ Minnesota Water Sustainability Framework (2011) by the Water Resources Center:

*"Minnesota's waters are governed by hundreds of laws, regulations, rules, and ordinances involving more than 20 federal agencies, seven state agencies, and hundreds of local units of government."*

- ❖ DNR, MDH, MPCA, MDA, BWSR, EQB plus Met Council

# Water Management Organizations



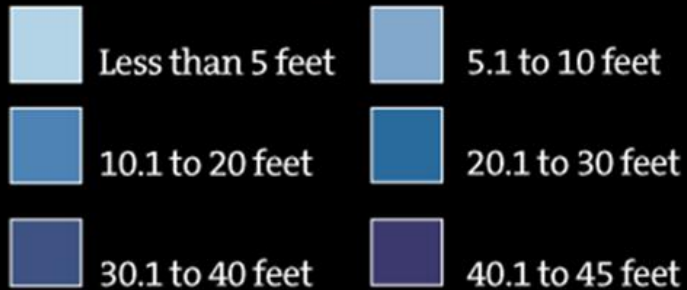
- ❖ 70 throughout state
- ❖ 33 in metro alone
- ❖ Mandatory in 7 county metro
  - ❖ Some WDs now permitting wells!
- ❖ 3 WDs in Woodbury

# Groundwater



## 2030 MODEL - PROJECTED DRAWDOWN IN THE PRAIRIE DU CHIEN - JORDAN AQUIFER

### CHANGE IN FUTURE GROUNDWATER DRAWDOWN

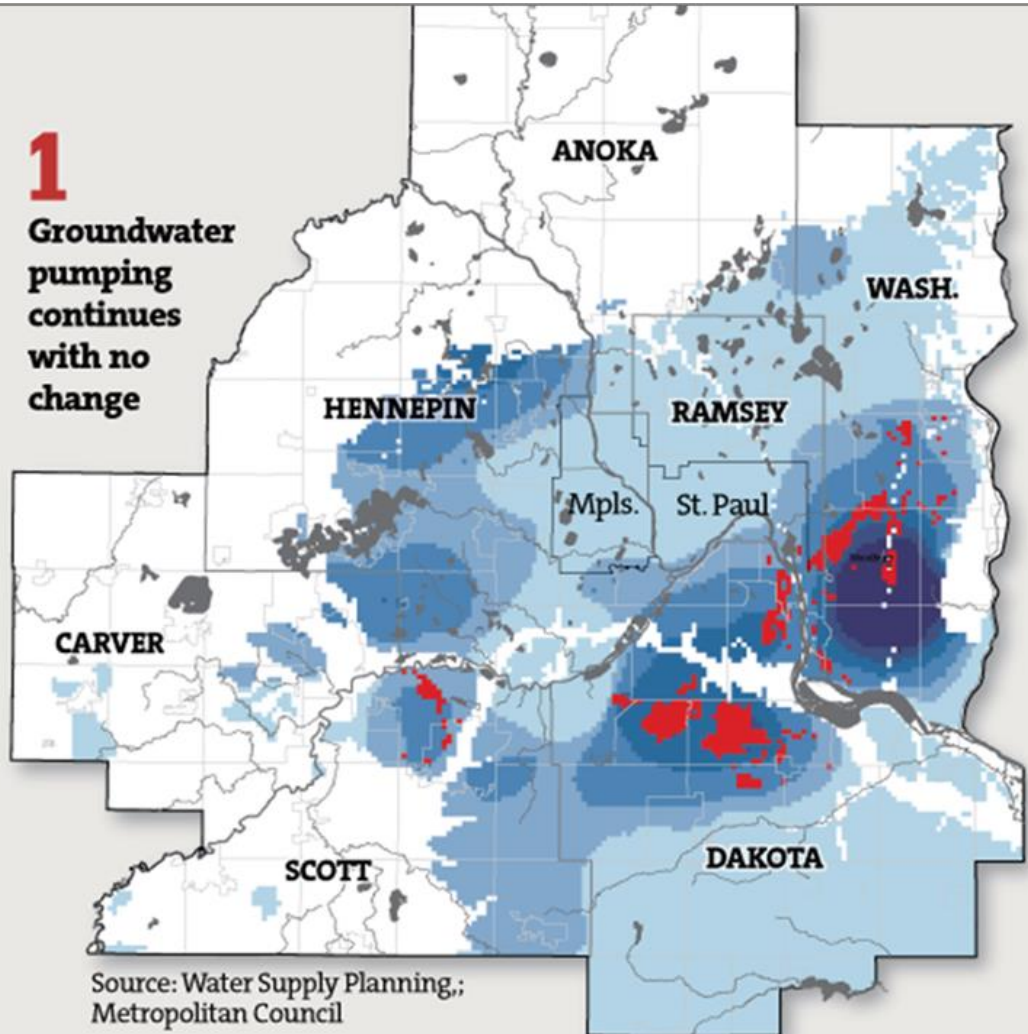


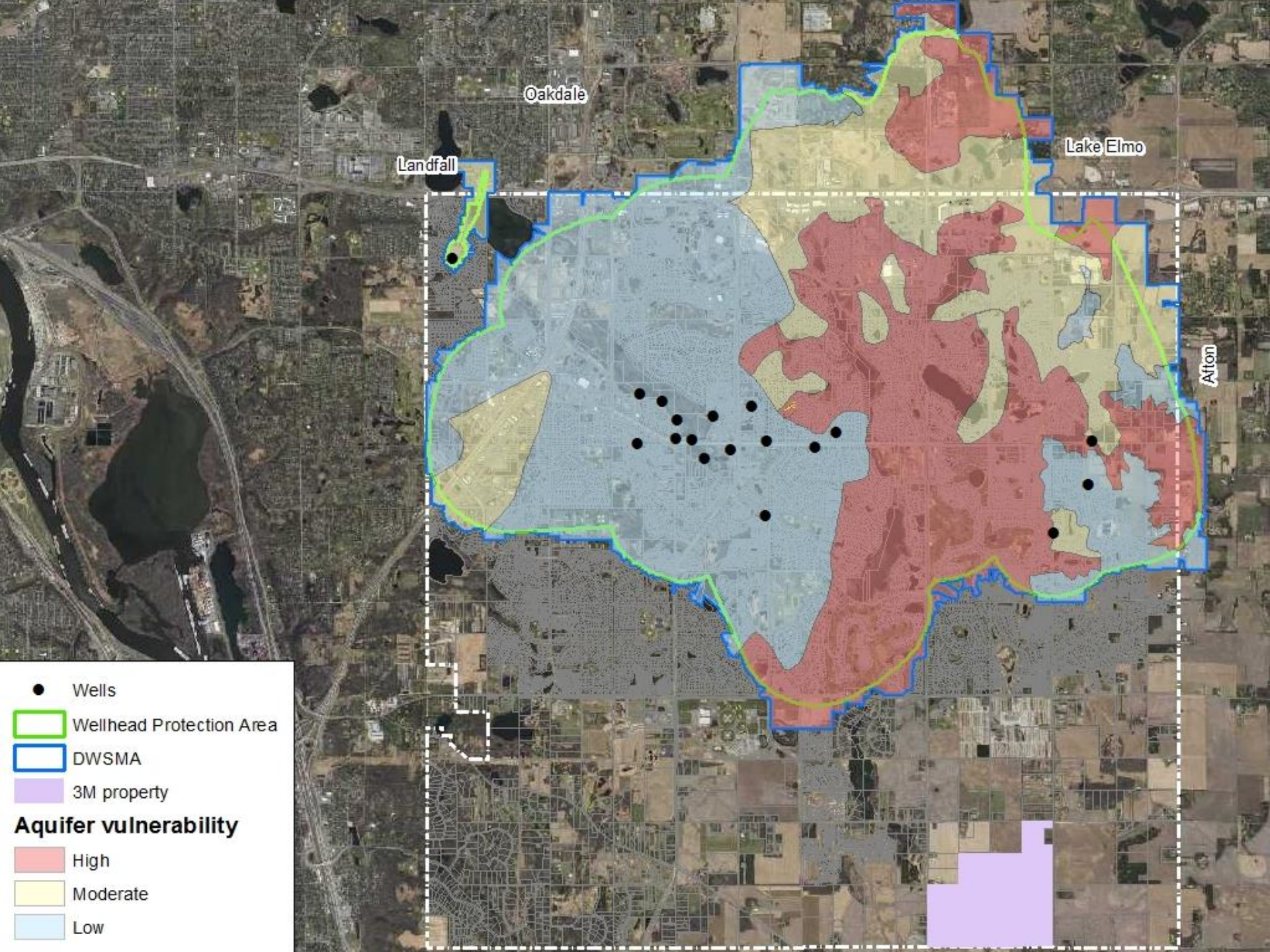
### AREAS MOST AFFECTED

 Drawdown exceeds  
50% of available head\*

\*Available head in a well is the height water rises above the physical top of the aquifer, the 50 percent mark is when it becomes the greatest concern.

**Note:** Model 1 results assume long-term average conditions and continued development of traditional water supplies. Models 2 and 3 assume that some communities adopt different water supplies than they currently use.





- Wells
  - Wellhead Protection Area
  - DWSMA
  - 3M property
- Aquifer vulnerability**
- High
  - Moderate
  - Low



# Water Utility



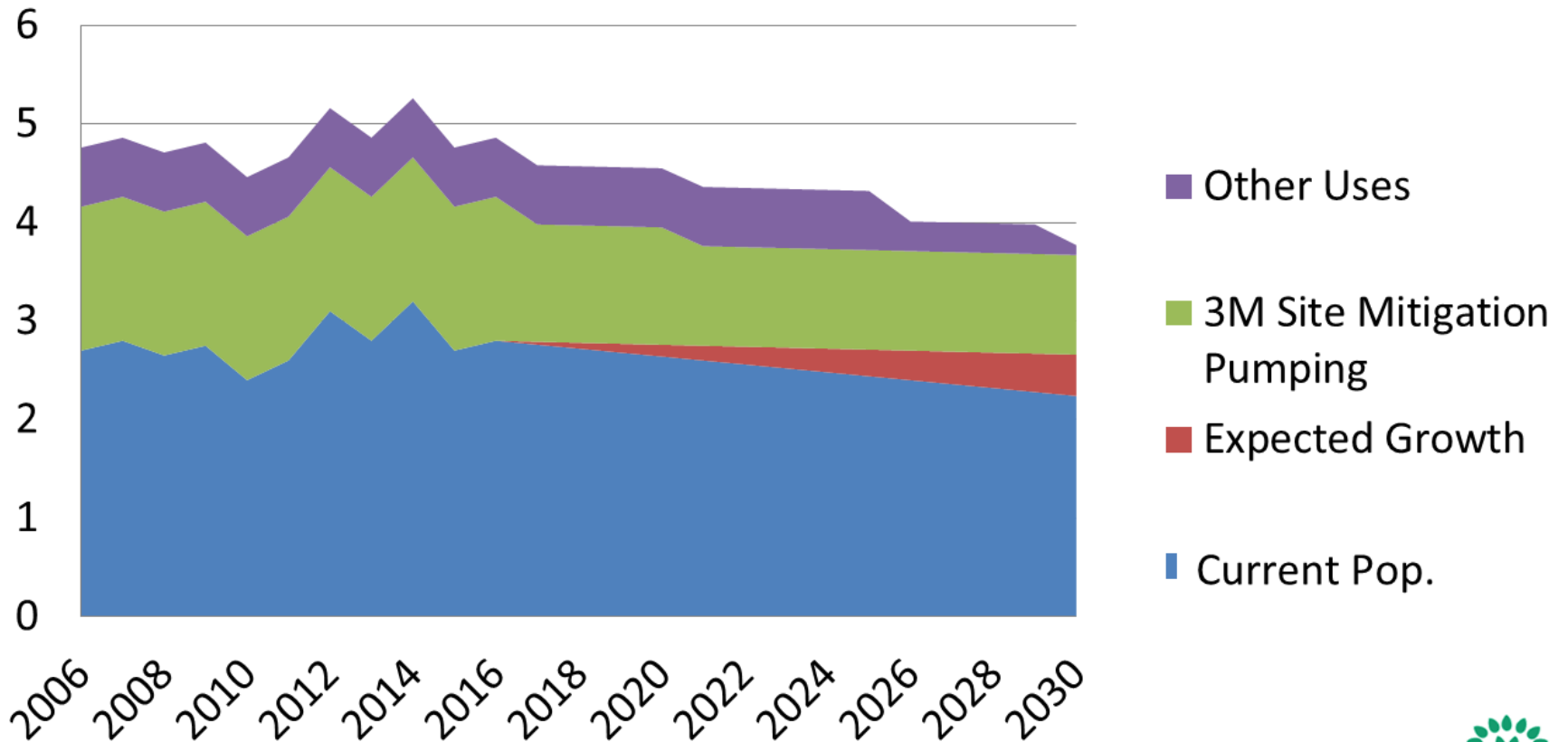
- ❖ 19 wells
- ❖ 5 towers
- ❖ 300 miles of water main
- ❖ 19 staff
- ❖ \$12.4 million expenditures



# Water Use Goals



Billions of Gallons



# How To Reach Goals



- ❖ Education – behavior change of residents is critical
- ❖ Conservation programs
  - Irrigation is biggest target
  - “The Carrot”
- ❖ Rate structure review
  - “The Stick”

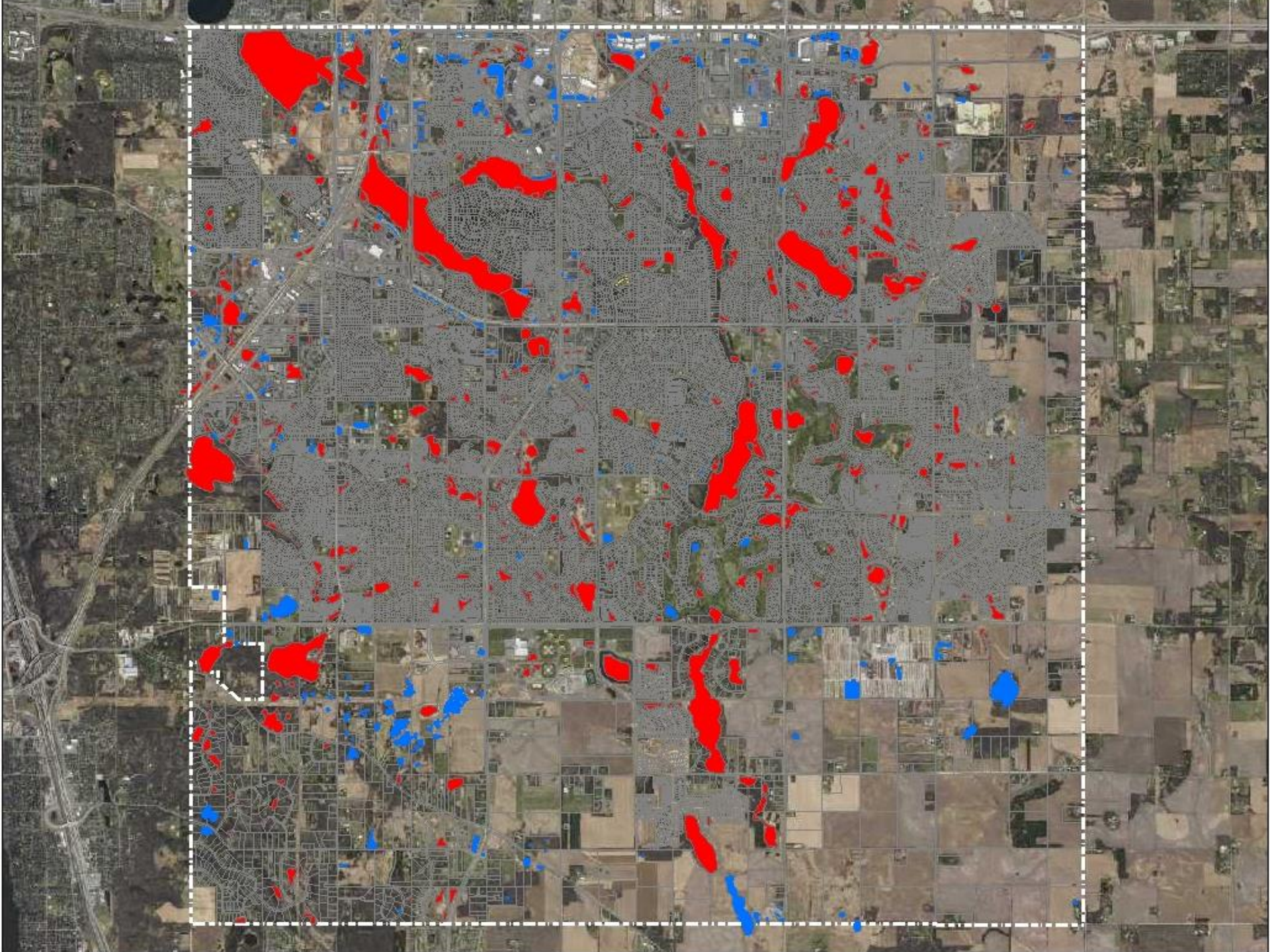
# Stormwater Management

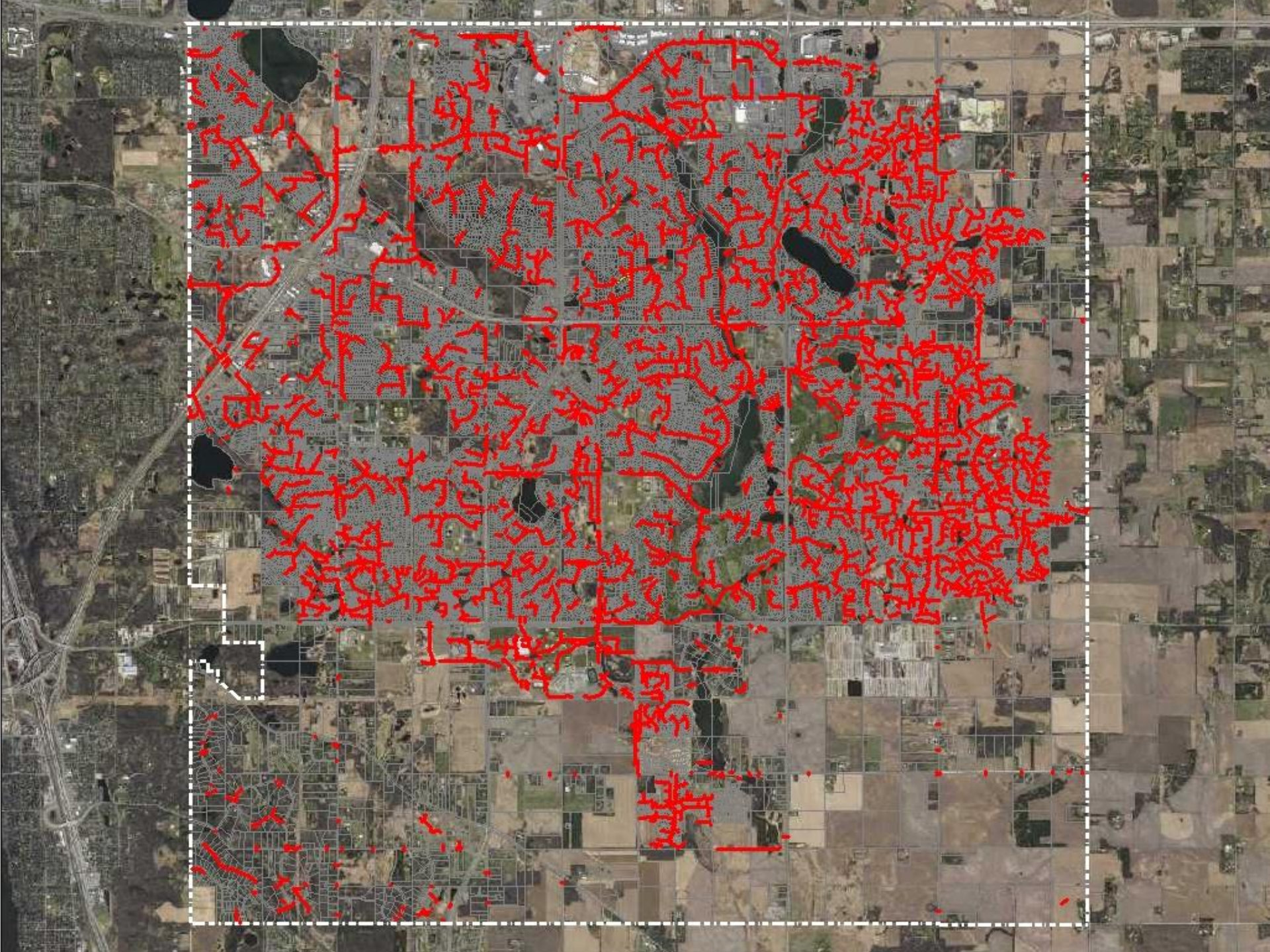


- ❖ Explosion of:
  - Participants
  - Regulations
  - New ideas
  - New responsibilities
  - Expenses

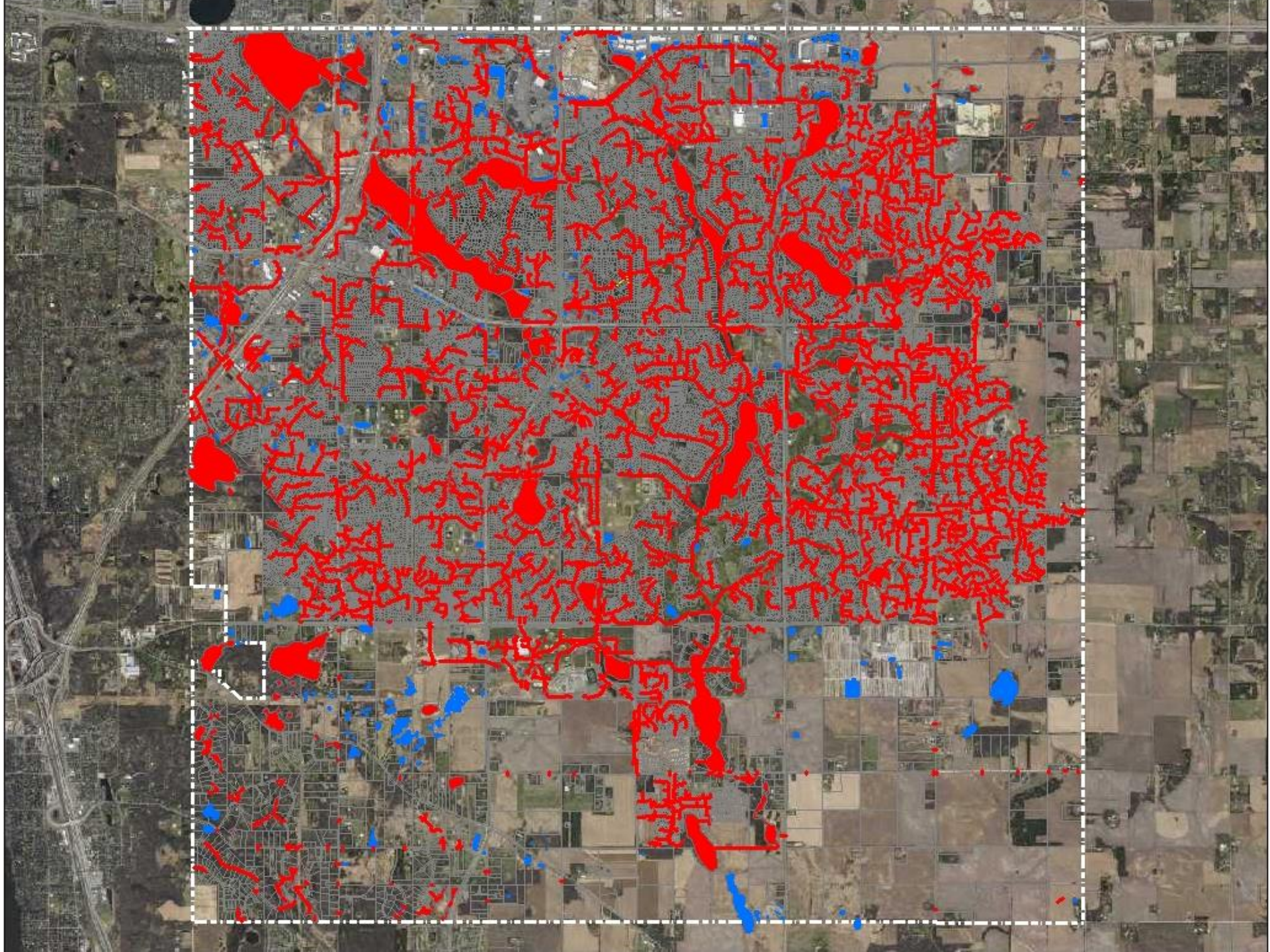












# Stormwater Financing and Staffing



- ❖ 2017 proposed expenditures \$2.4 million
- ❖ Residential fee of \$6/month (\$2 million/year)
- ❖ 25% of Public Works streets staff work entirely on stormwater issues most of the year

# Maintenance Challenges



- ❖ Pond maintenance is only beginning – contaminated sediment (PAH) in the majority of ponds
  - 500 ponds to periodically dredge
  - MPCA classifies dredging as hazardous
  - 2017 pond maintenance project – 17 ponds - \$700,000

# Storm Infrastructure is Aging



# Flood Prevention & Response Duty



# Bigger Storms



Atlas 14: New data showing storms in the region have been more intense and frequent— need to plan for new reality



# Green Infrastructure/Alternative BMPs



Vision of last 15 years:

- ❖ Mimic natural conditions
- ❖ Treat stormwater at the source
- ❖ Numerous small treatment systems
- ❖ Infiltrate water into the ground
- ❖ A great *IDEA*

# Expensive Emerging Maintenance Issues





# Infiltrating Chlorides into Groundwater



# Explosion of New “Innovative” Ideas



# Bigger Can Be Better



# Reuse Regulatory Example



- ❖ Reuse has been around for decades
  - MDH is exploring new regulations
  - DNR proposed appropriation permit is onerous
  - Woodbury and most other cities will discontinue reuse projects if new regulations and controls are adopted by state agencies

# How Can We Help Cities?



- ❖ Simplify regulatory framework
  - Water governance study said reduce WMOs
  - One watershed/one plan FOR the metro
  - Clarify agency involvement and responsibility

# Funding



## ❖ Funding

- Most now goes to WDs (CWF)
- Consider costs of new state programs

## ❖ Mandates

- MS4 requirements heavier every cycle
- Pond dredging now a hazardous waste, need free landfills, or state money

# TRUST Cities To Do the Right Thing



- ❖ Cities are at the center of the maelstrom...looking for creative and effective solutions to the water challenges
- ❖ Solutions are most effective at the local level
- ❖ Problems are simple when we look through one lens; cities have to look through them all. Our water framework is way too complex.

# Development Review lens 16x



Sustainable design

Public safety

Street design/traffic

Economic development

Architectural standards

Site design

Parks/trails

Infrastructure design

Wetland preservation

Open space preservation

Landscaping

Density

Mass transit

Affordable housing

Inspection and maintenance

Surface Water



# The Road to Water Sustainability



We're all trying to get to the same place. Cities need some freedom and some trust in order to be effective.

