City of Mora Stormwater Assessment

May 16, 2017

Presented by
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Responsive partner.
Exceptional outcomes.

Topics to Cover

- Water Quality – why do we care?
- City Stormwater – where does it go?
- Overview of City Stormwater Assessment Project
- Final Thoughts

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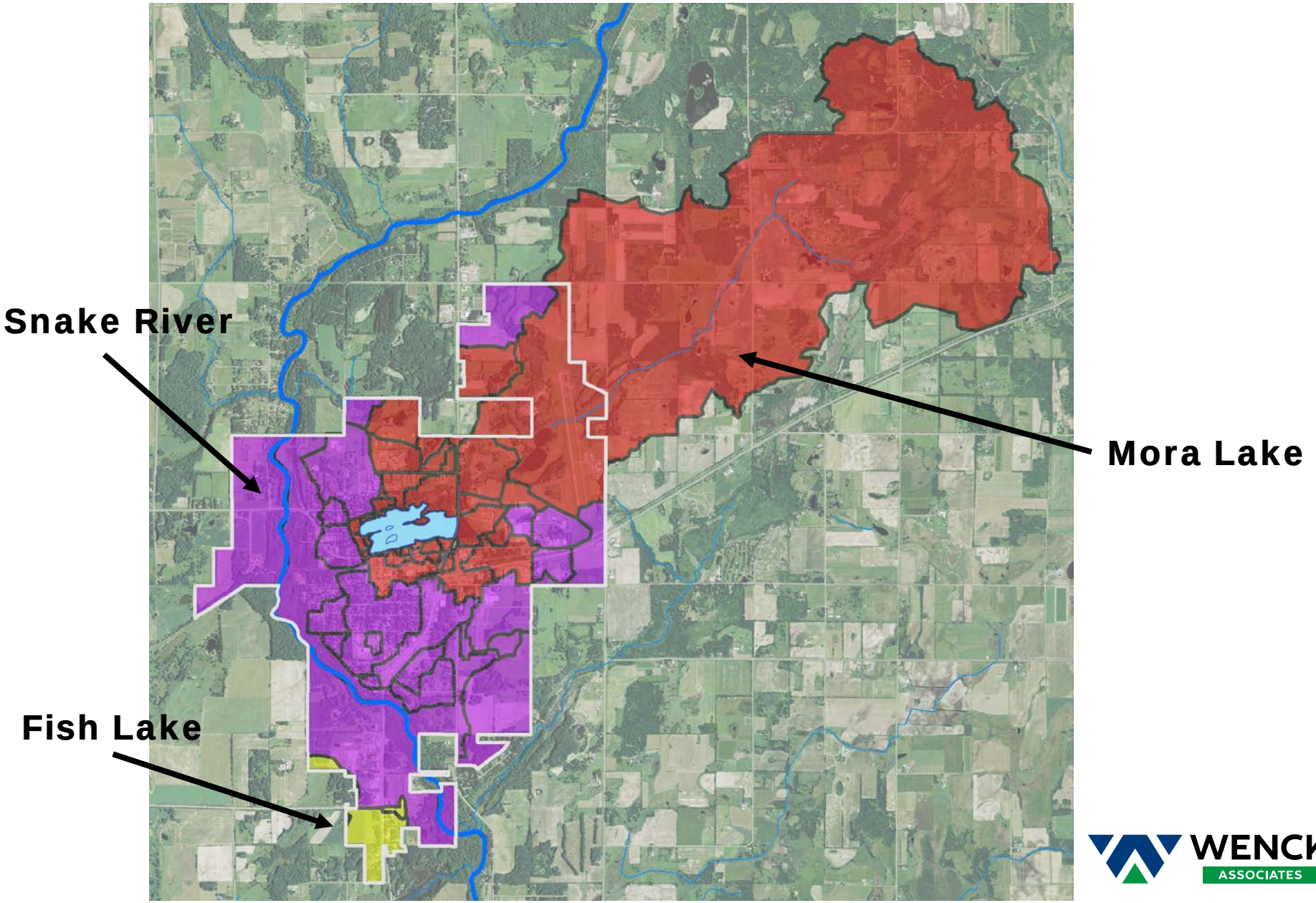
Pollutants in Stormwater

- Primary Pollutants in urban areas
  - Sediment**
  - Phosphorus***
  - Nitrogen
  - Bacteria
  - Chloride
- Water Quality Standards
  - Streams
  - Lakes
  - **T**otal **M**aximum **D**aily **L**oad

Where Does your Stormwater Go?



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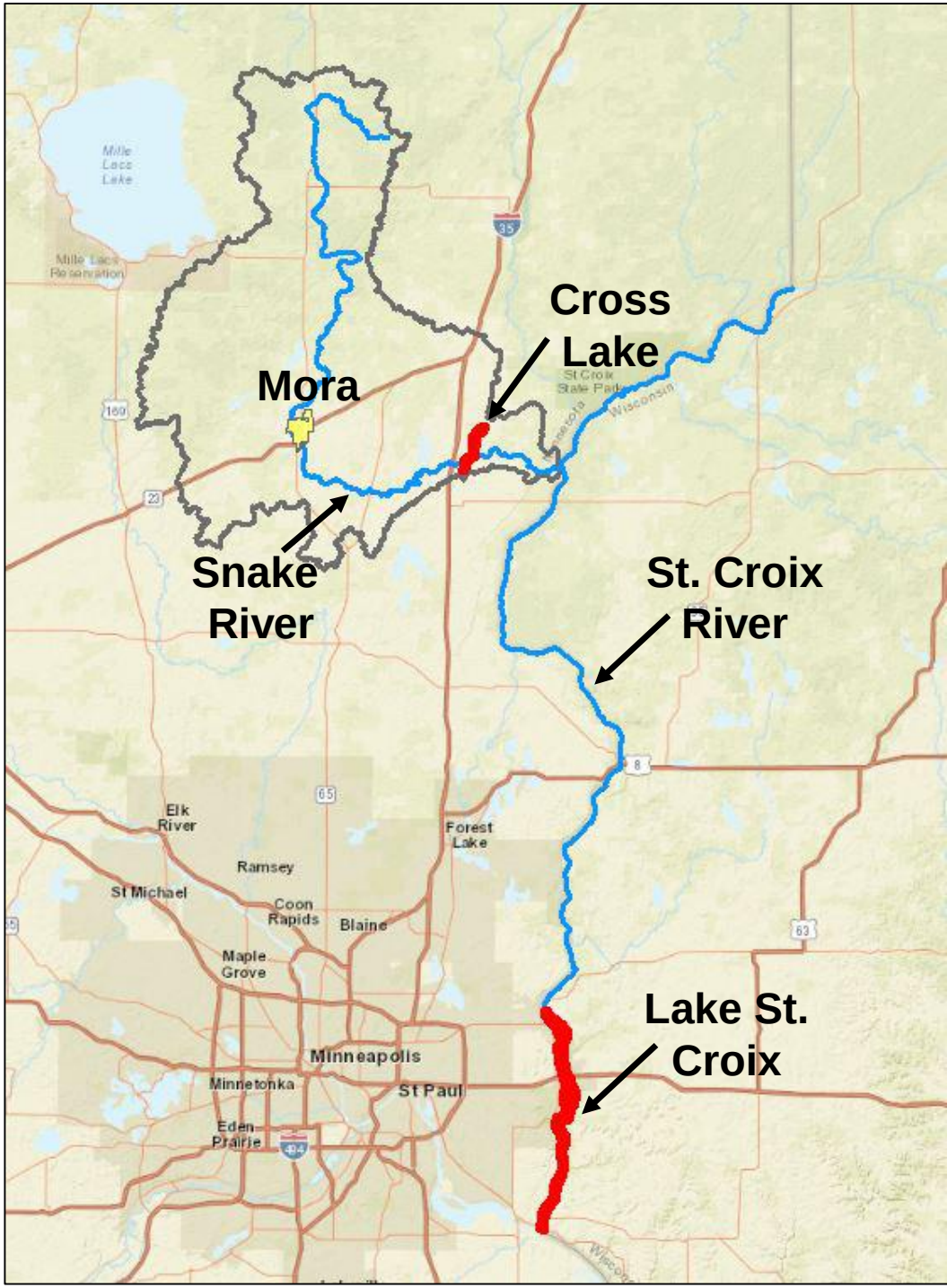
Where Does it Eventually Go?

- **Mora Lake**
  - Not yet impaired
  - Recent monitoring indicated high P levels
- **Snake & St. Croix Rivers**
  - No Impairments
  - National Scenic Riverway
  - Protect water quality
- **Cross Lake & Lake St. Croix**
  - Impaired for nutrients (P)
  - TMDLs completed
  - Cross: 1,100 lbs/yr reduction
  - Lake St. Croix: 76,000 lbs/yr reduction



City of Mora Stormwater Assessment Project

- **Purpose**:

  "To identify several stormwater best management practices (BMPs) for the City of Mora to help improve water quality in Mora Lake and downstream waterbodies"

- **Recent Montioring:**
  - Mora Lake (2013-2015)
  - Outfalls to Snake River (2013-2015)
- **Primary Pollutants of Concern**:
  - Sediment
  - Phosphorus
- **Tools:**
  - Urban stormwater model (P8)
  - Lake model for Mora Lake (BATHTUB)

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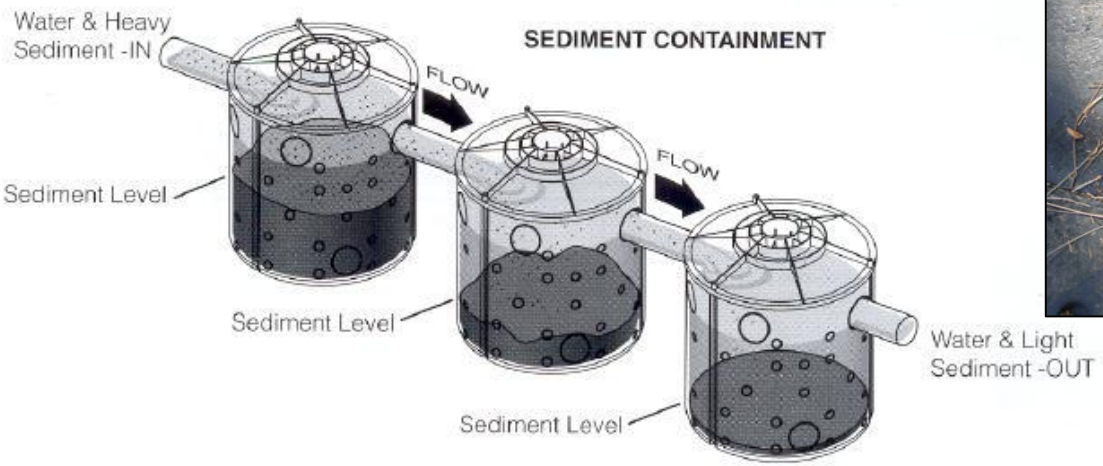
Types of Stormwater BMPs

Catch Basin Sumps and Sediment Traps

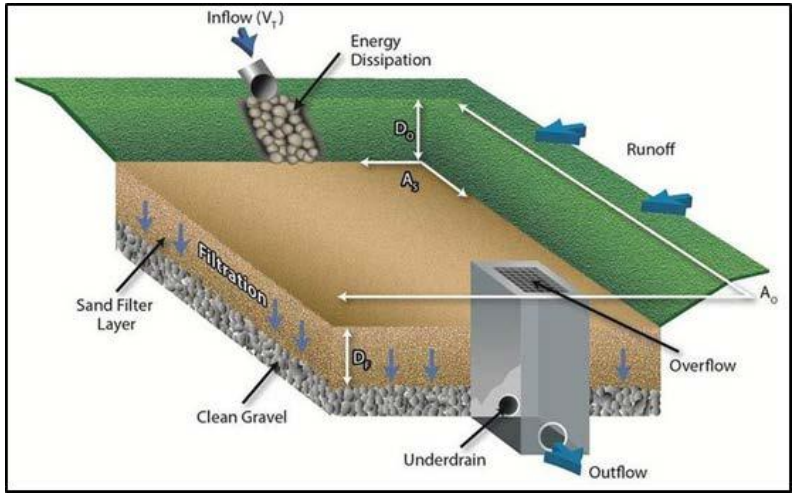


Stormwater Ponds

Types of Stormwater BMPs

Infiltration Basins (Rain Gardens)

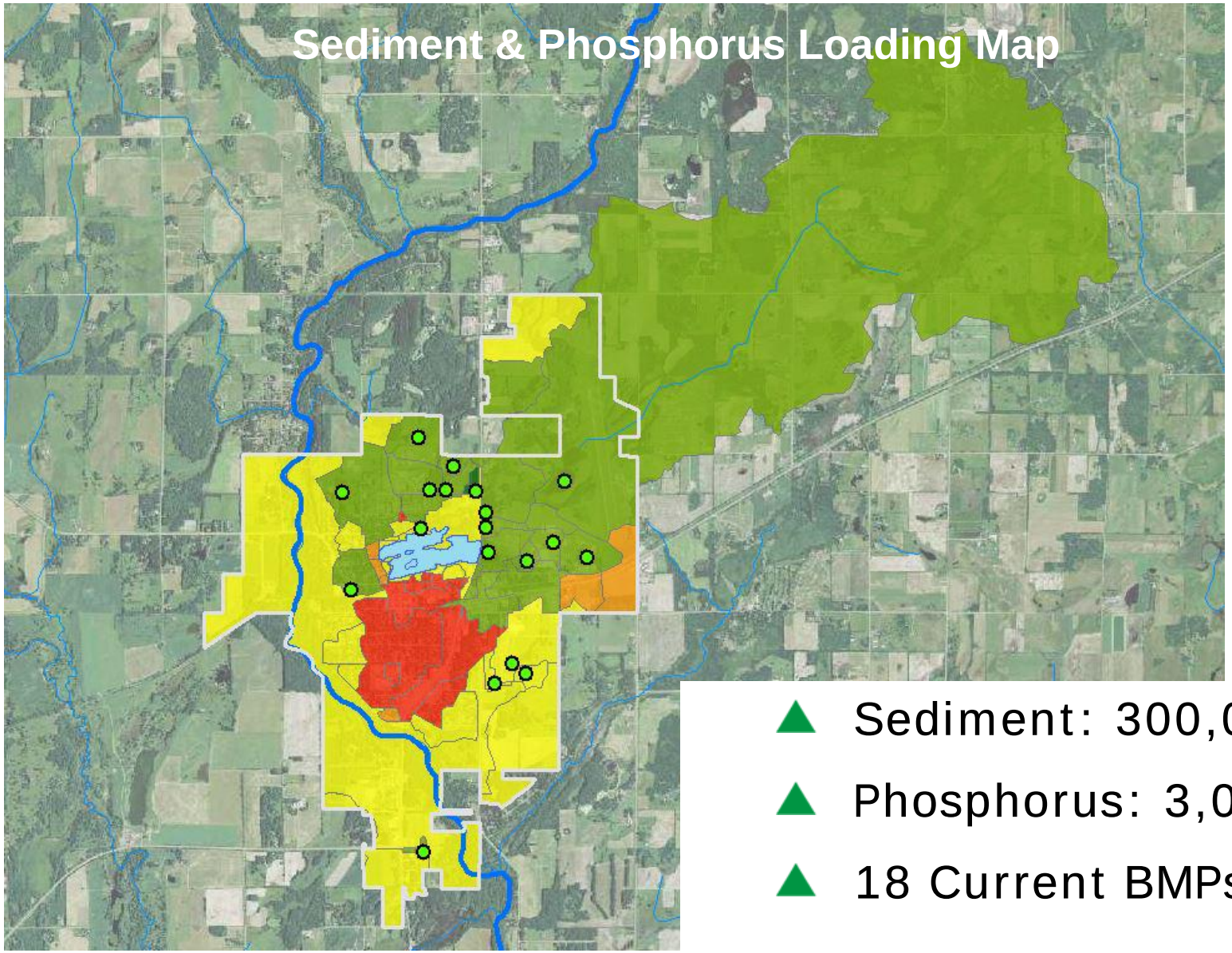
Filtration Practices



Types of Stormwater BMPs

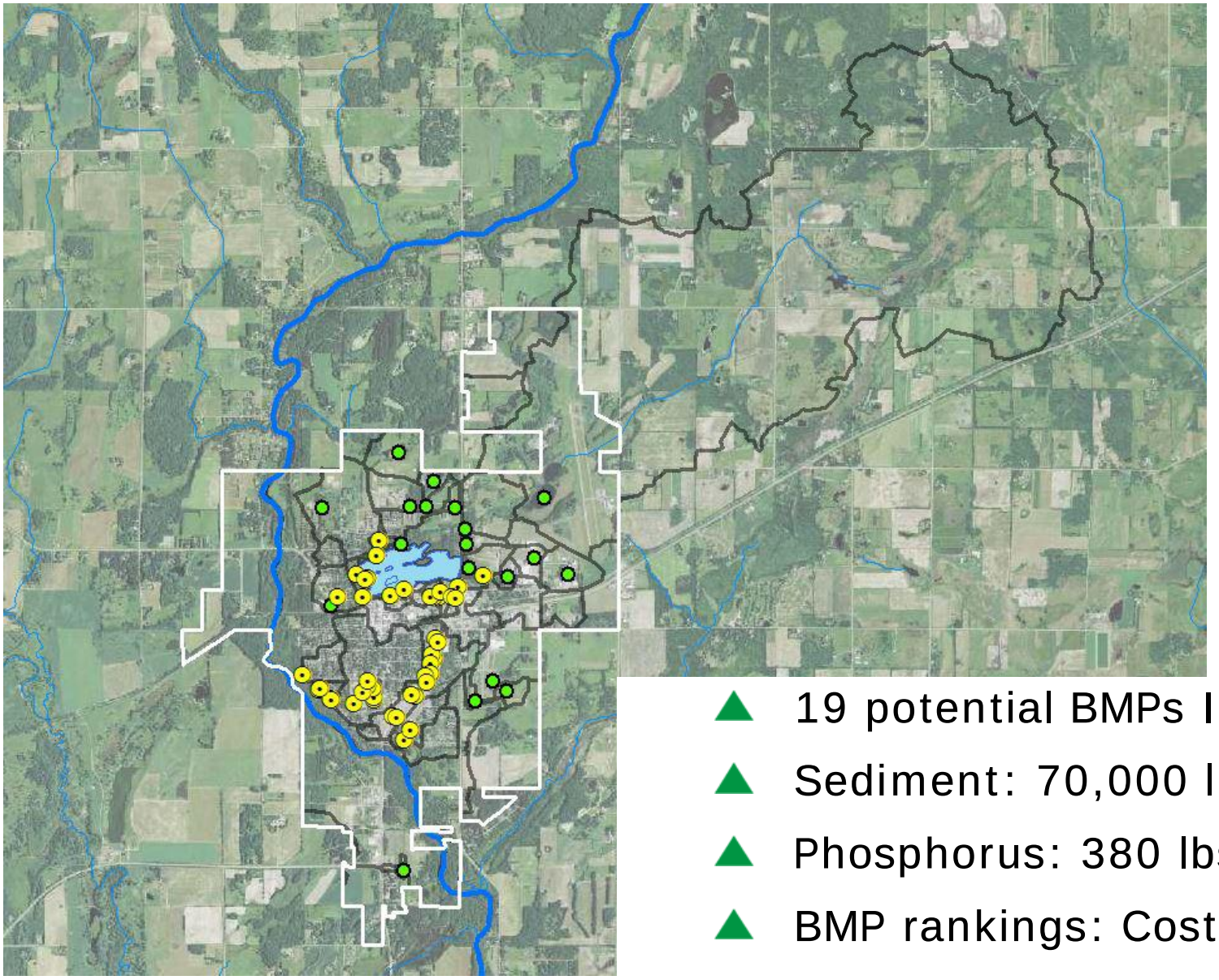
Underground Systems

City of Mora Current Conditions



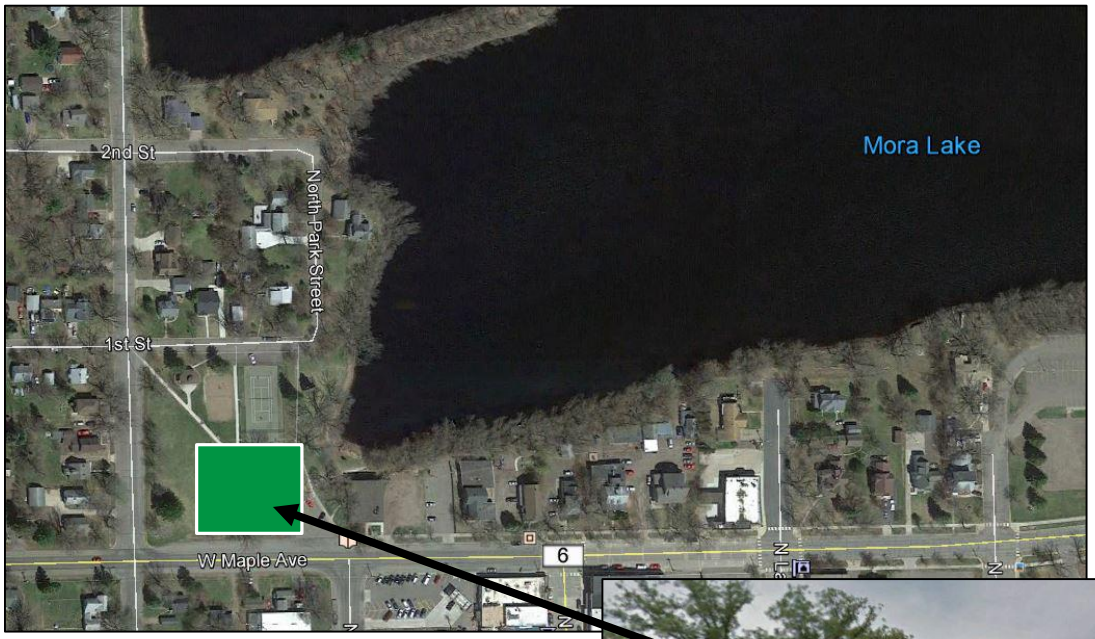
- Sediment: 300,000 lbs/yr
- Phosphorus: 3,000 lbs/yr
- 18 Current BMPs (ponds)

Proposed BMPs



- 19 potential BMPs ID’d
- Sediment: 70,000 lbs/yr
- Phosphorus: 380 lbs/yr
- BMP rankings: Cost/lb reduction

Library Park Underground Infiltration / Filtration BMP



- Sediment reduction: 5,700 lbs/yr
- Phosphorus reduction: 38 lbs/yr
- Cost: $500K +
- Note: Very good cost benefit

County Fairground Raingardens

- Sediment reduction: 900 lbs/yr
- Phosphorus reduction: 6 lbs/yr
- Cost: $60K
- Note: Moderate cost benefit

Riverside Street Neighborhood Raingardens

- Sediment reduction: 400 lbs/yr
- Phosphorus reduction: 3 lbs/yr
- Cost: $30K
- Note: Moderate cost benefit

Final Thoughts

- 19 Potential Stormwater BMPs Identified
  - 70,000 lbs/yr sediment reduction
  - 380 lbs/yr phosphorus reduction

- Future BMP planning – Next Steps
  - Determine BMP feasibility
  - Prioritize
  - Incorporate into road reconstruction, park planning, other CIPs
  - Funding sources: CWF grants (state), 319 grants (federal)
  - Partnerships: SWCD, County, Snake River Watershed Management Board

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Questions?

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