

May 9, 2019  
Water Summit

# Waste to Utility

## Harnessing Stormwater in Waconia



# Location

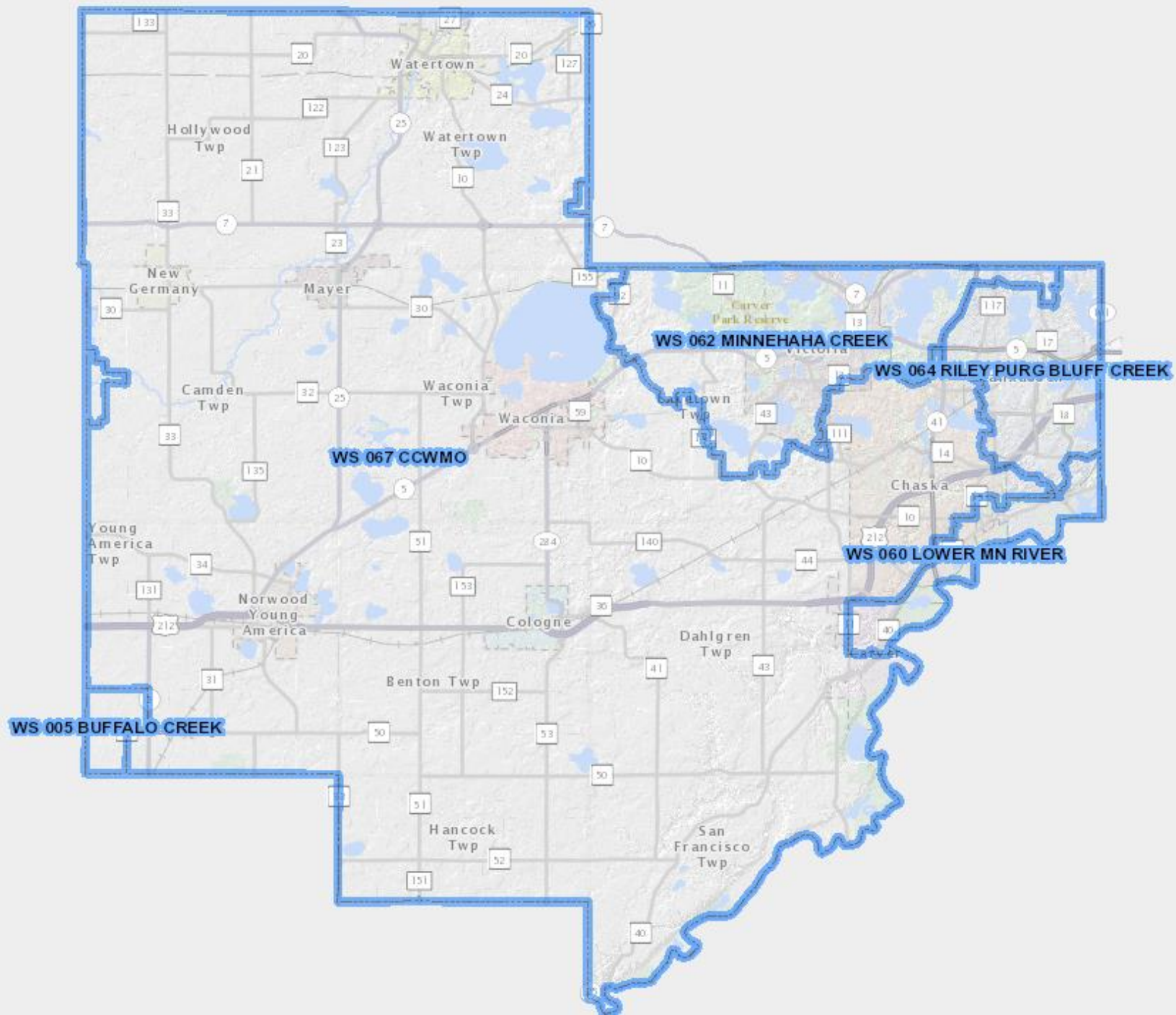
- Carver County
  - Part of the 7 County Metro Area
  - 375 square miles
  - Population of 102,858
  - Fastest growing County in Minnesota from 2010 to 2016 (10.5% increase)
  - Mostly clay soils
- Waconia
  - Current population: 12,633
  - 13% increase since 2010
  - 79.5% increase since 2000, and 249.7% increase since 1990



# Historical Background

- Watershed Districts were authorized by the State in 1955
  - 46 watershed districts in Minnesota
- Watershed Management Organizations were authorized in 1982
  - Within the 7 county Metro Area
  - Carver County Water Management Organization (CCWMO) established in 1996





# Carver County Water Management Organization

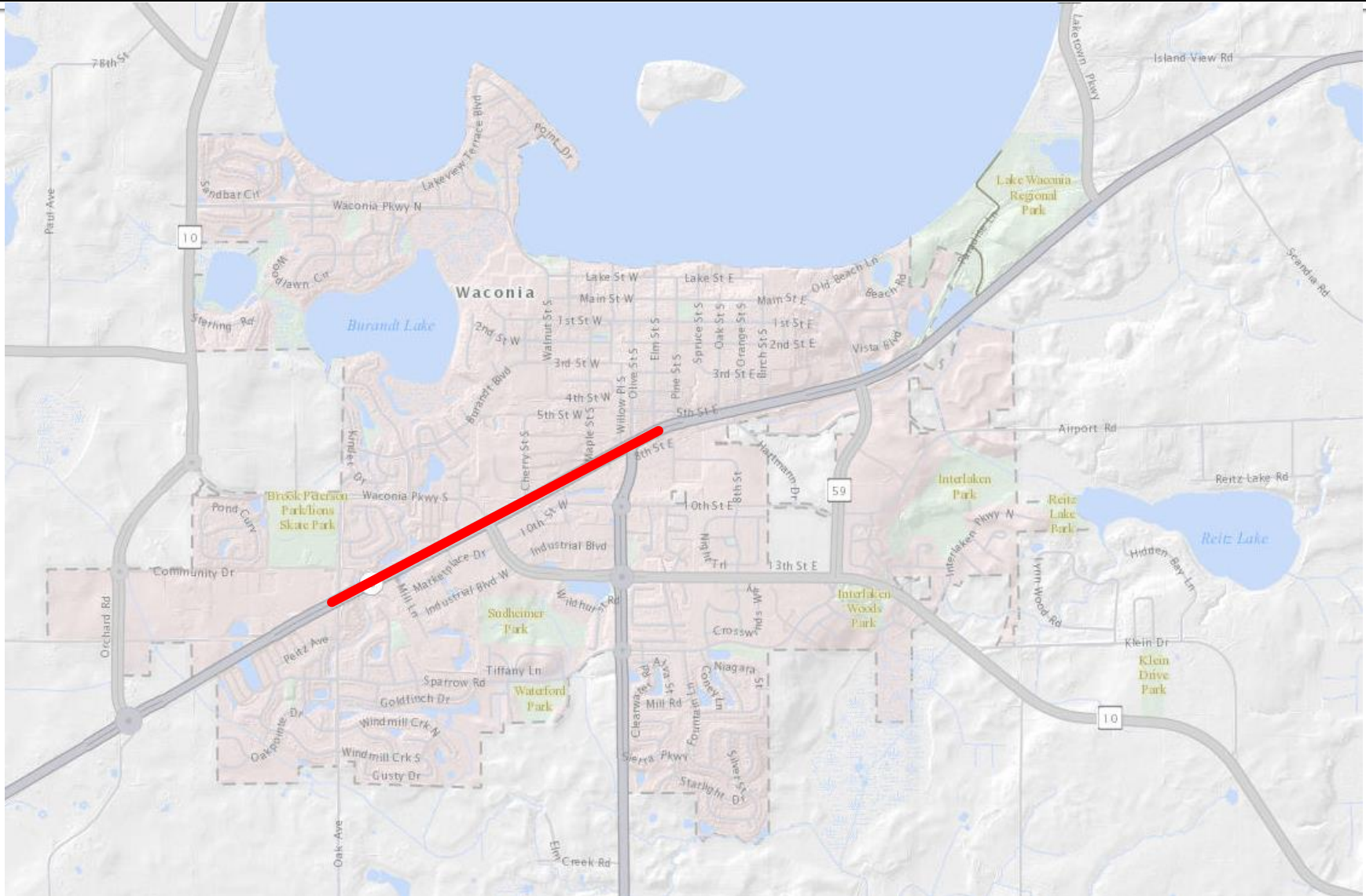
- CCWMO Ordinance Update in 2016
  - Water Quality is 1 inch
    - Volume reduction is equivalent to 0.5 inches
  - Volume reduction is equal to 1 inch
    - Unless the site is constrained, then 0.5 inches
    - Clay soils is a constraint
- Stormwater Reuse as an option to meet volume reduction.
- Simple process to establish credit
  - 4 parameters

# Unique Opportunity

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- Hwy 5 Reconstruction Project
  - Planning in 2015
  - Reconstruction of 1.4 miles

# Unique Opportunity





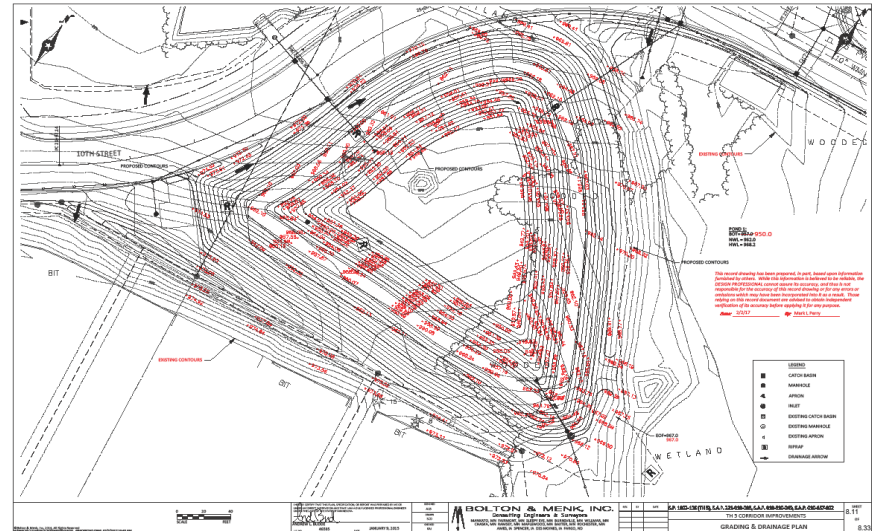
# Unique Opportunity

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- Hwy 5 Reconstruction Project
  - Multiple BMPs were identified to treat stormwater.
  - Large pond for rate control and some Water Quality treatment.
  - Also use for Volume Control with Reuse

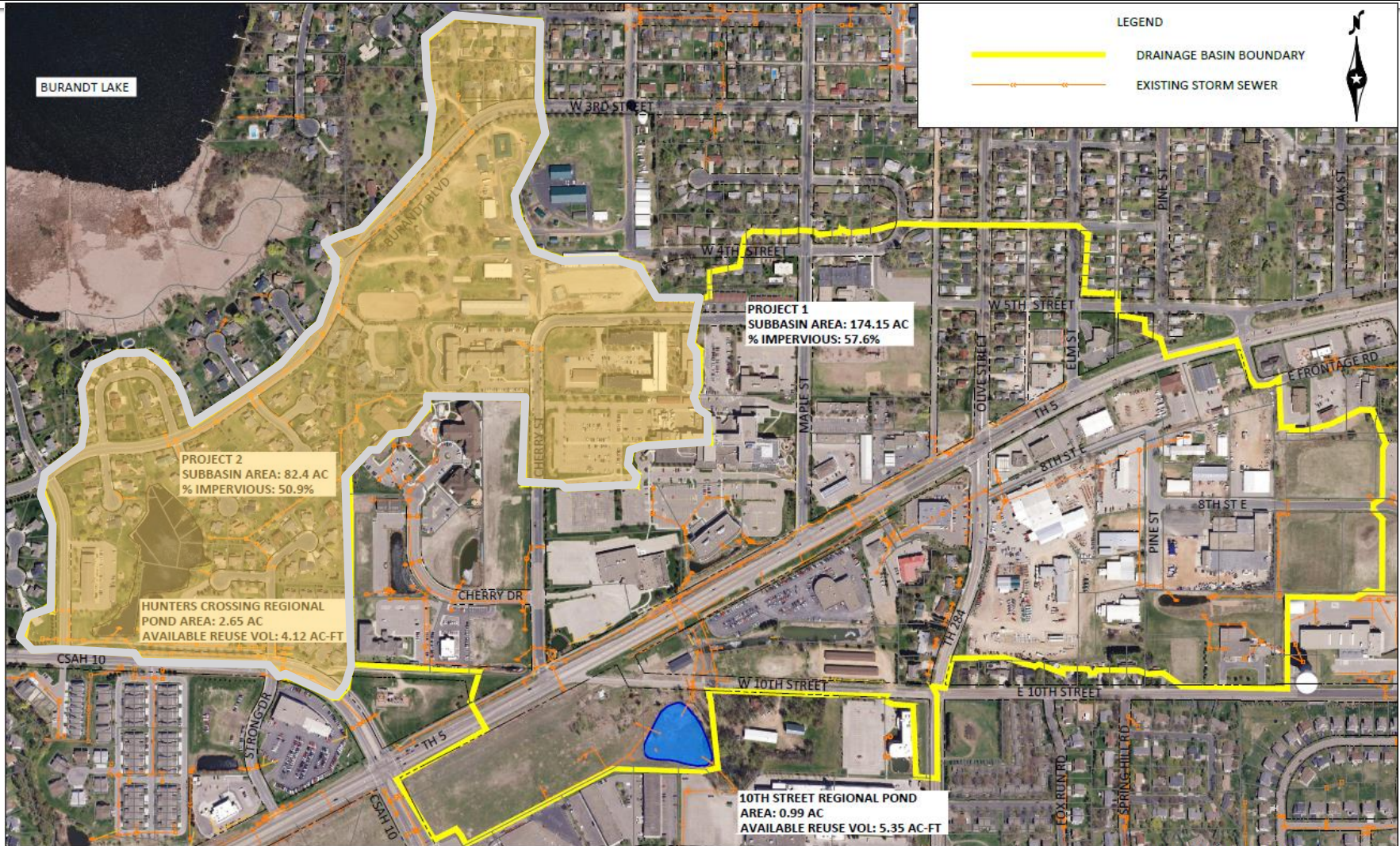
# Unique Opportunity

- Waconia Regional Reuse System
  - Large pond with a large volume of usable water
    - ~240,000 cubic feet of water for irrigation
    - Enough credit for 33 acres of new impervious surfaces
  - Subwatershed of 170 acres
    - 100 acres are impervious





# Unique Opportunity



# CCWMO Partnership

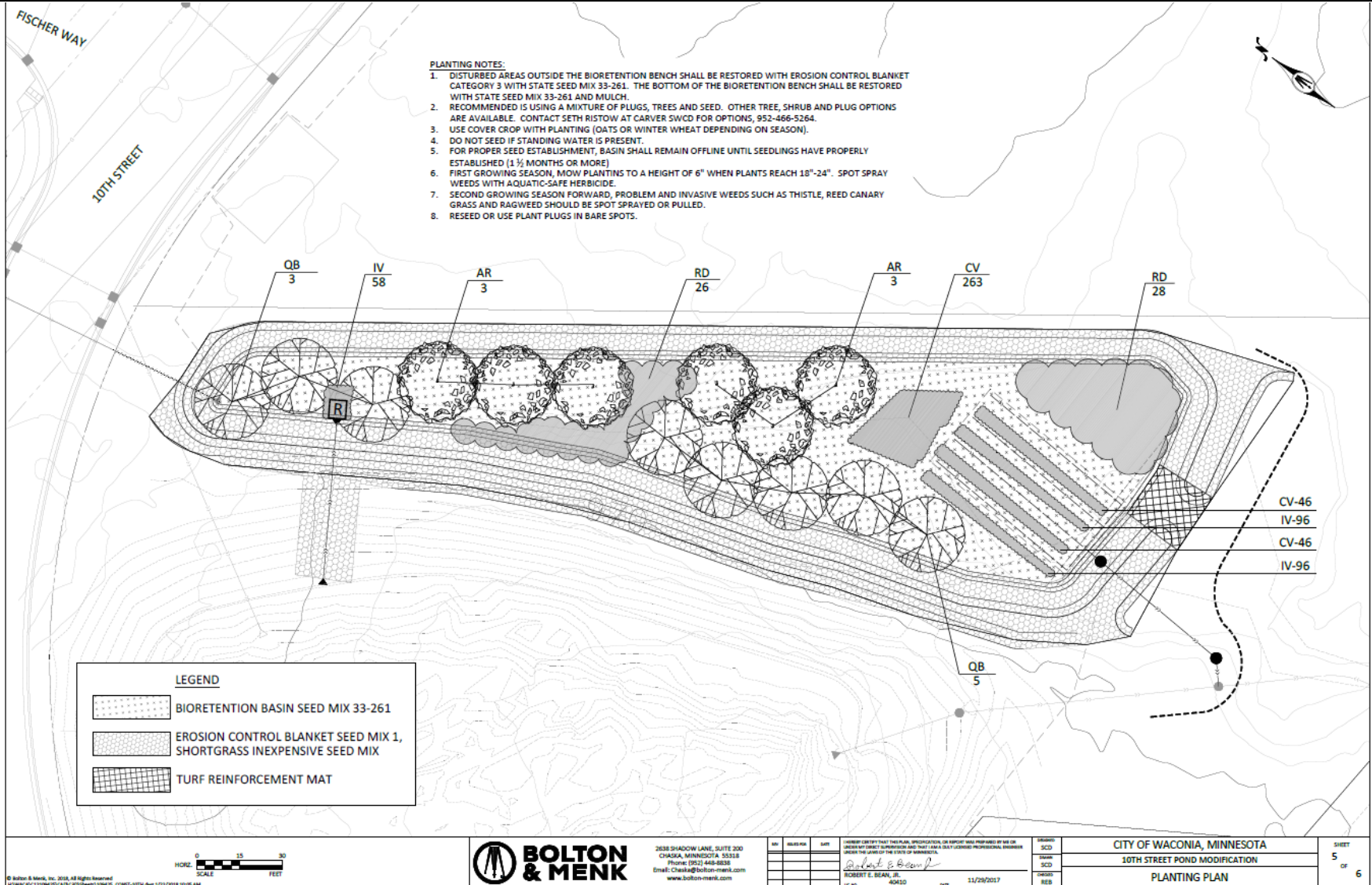
- Partnership with CCWMO and Waconia
  - Meets Volume Reduction Requirements
    - Volume Credit Bank
  - Bank was started with three sites for irrigation
    - First met Hwy 5 Requirements
    - Left over credit was banked for future use
  - CCWMO tracks credits created and withdrawn
  - Bank cannot be negative
    - For a proposal to be approved, must show that there is enough credits to meet volume reductions for site.

# CCWMO Partnership

- Partnership with CCWMO and Waconia
  - Construction of Biofiltration Basin
    - Allows for most sites to meet WMO Water Quality Reduction Requirements
    - Only in areas that parcels directly drain to the pond



# CCWMO Partnership



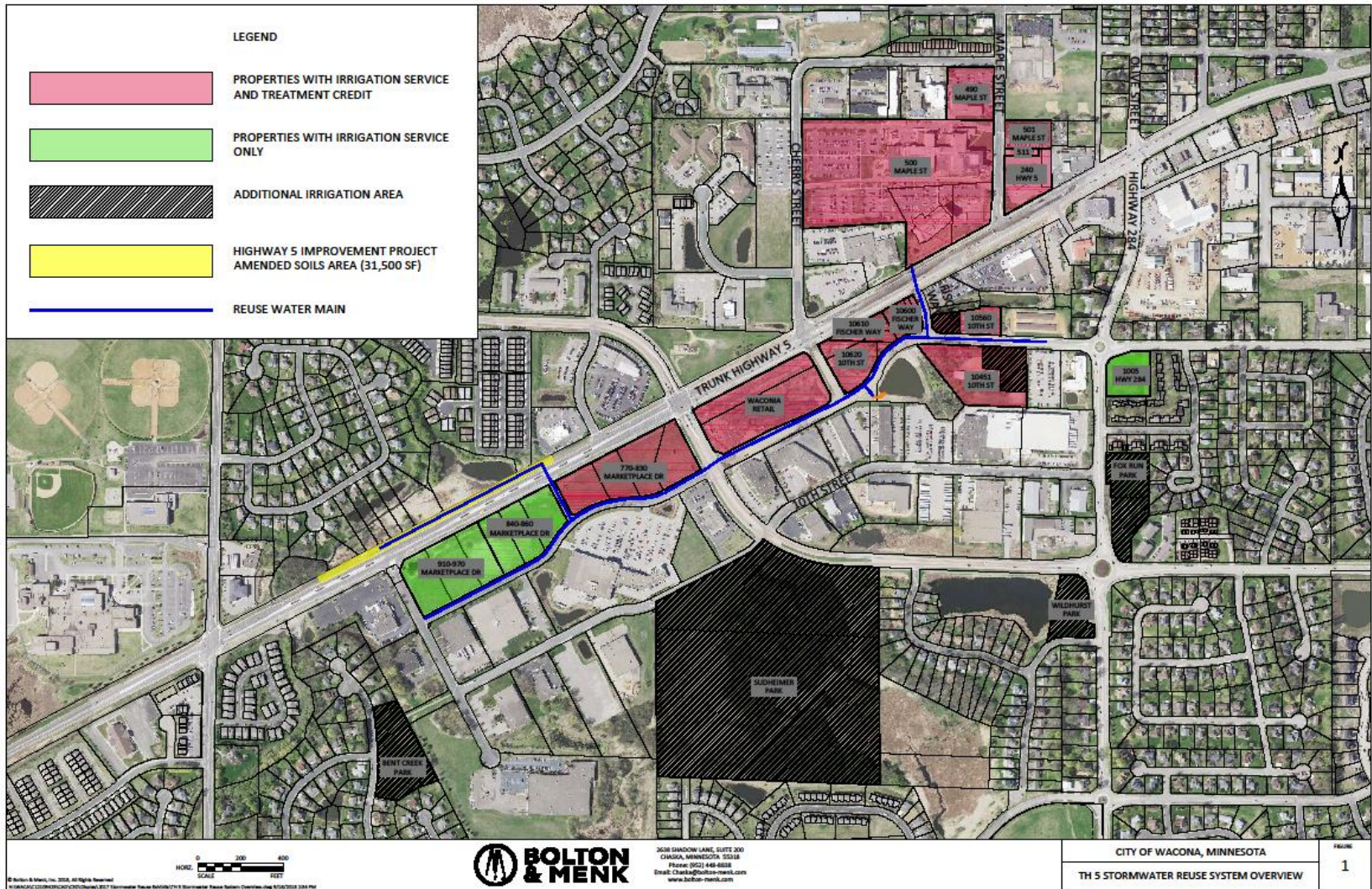
# Waconia Regional Irrigation Zone

- Established a regional zone which parcels can participate in for WQ
- 29 sites in this zone
- City of Waconia developed Ordinances (Chapter 415), Billing (Chapter 416.05), and Agreements for these areas





# Waconia Regional Irrigation Zone



# Waconia Regional Irrigation Zone

- Waconia Regional Reuse System
  - Connection Fee
    - Base is established by savings of on-site Water Quality Improvement costs
    - Installation of Meter, Irrigation Controller and Staff Time
  - User Rate
    - \$2.50 per 1000 gallons
    - 50% less than the high rate for potable water use

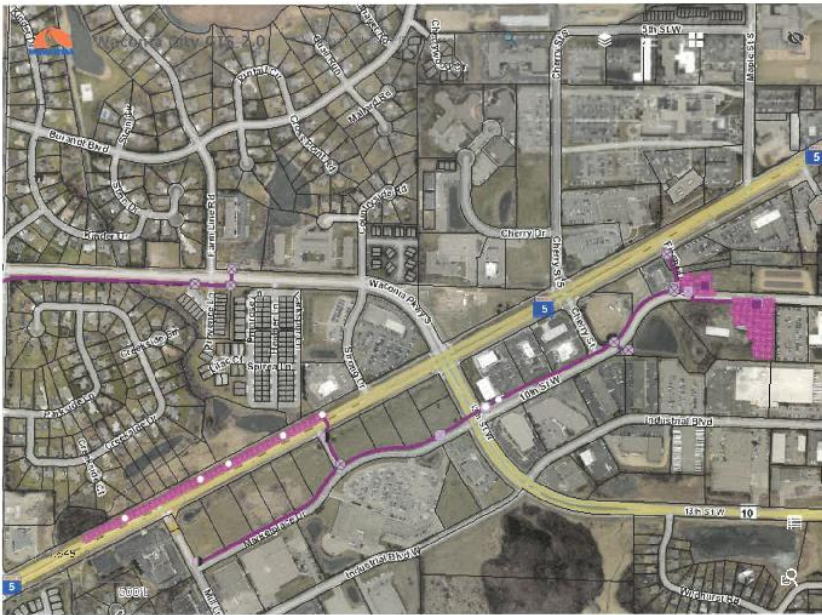




# Reuse as a Utility; Distribution

Waconia City GIS 2.0

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<https://gis.enr.com/mn.us/Waconia/GIS/>

5/7/2019

- Currently One Pump Station with 0.89 miles of 6 and 4 inch mains
- Operational Gate Valves and Blow-off Sites
- 8 connections including Businesses and City Sites



# Results

- Results
  - 6 sites are online
  - Almost 2.5 million gallons were used in 2018, 4.2 million gallons since 2017
  - Distribution expansion by June of 2019 north of Highway 5 adding 16 acres of green space with Ridgeview Medical



# Benefits

- Benefits to City
  - Decrease in peak demand on potable water
  - Decrease costs for storage and delivery of water
- Benefits to Developer
  - Reduces the amount of space needed to treat water
  - Can use the maximum allowed impervious cover as set by the city
- Benefits to WMO
  - Coordinated effort with city to reduce pollutant loads and volume
  - Known maintenance schedule with City Public Services handling the majority of aspects for the delivery of water.



# Reuse in Carver County

- 23 sites have been approved to meet CCWMO volume reduction requirements
  - Waconia Regional System
    - 6 sites currently approved, 1 pending
- 20 sites were monitored last year
  - Over 12.8 million gallons was used in 2018
  - Used roughly 1,700,000 gallons less than the permitted amounts.
  - Four sites are a combined 2.4 million gallons short due to mechanical and installation issues.

# Reuse in Carver County

- Reductions
  - **25 pounds** of phosphorus removed; **8,578 pounds** of sediment removed.
  - Based upon Water Rates in Chaska, Carver, and Waconia: saved **\$51,325.93** in water costs over 20 sites
  - Removed **10.5%** of volume generated off of 197 acres of impervious surfaces.
- Remaining 3 sites currently permitted, not operational
  - Permitted use of 12.5 million gallons, 24 pounds of phosphorus; 8,368 pounds of sediment.
  - Savings of \$44,423.

# Questions

