Saint Paul Regional Water Services

Steve Schneider
General Manager

Jim Graupmann
Asst. Gen. Manager

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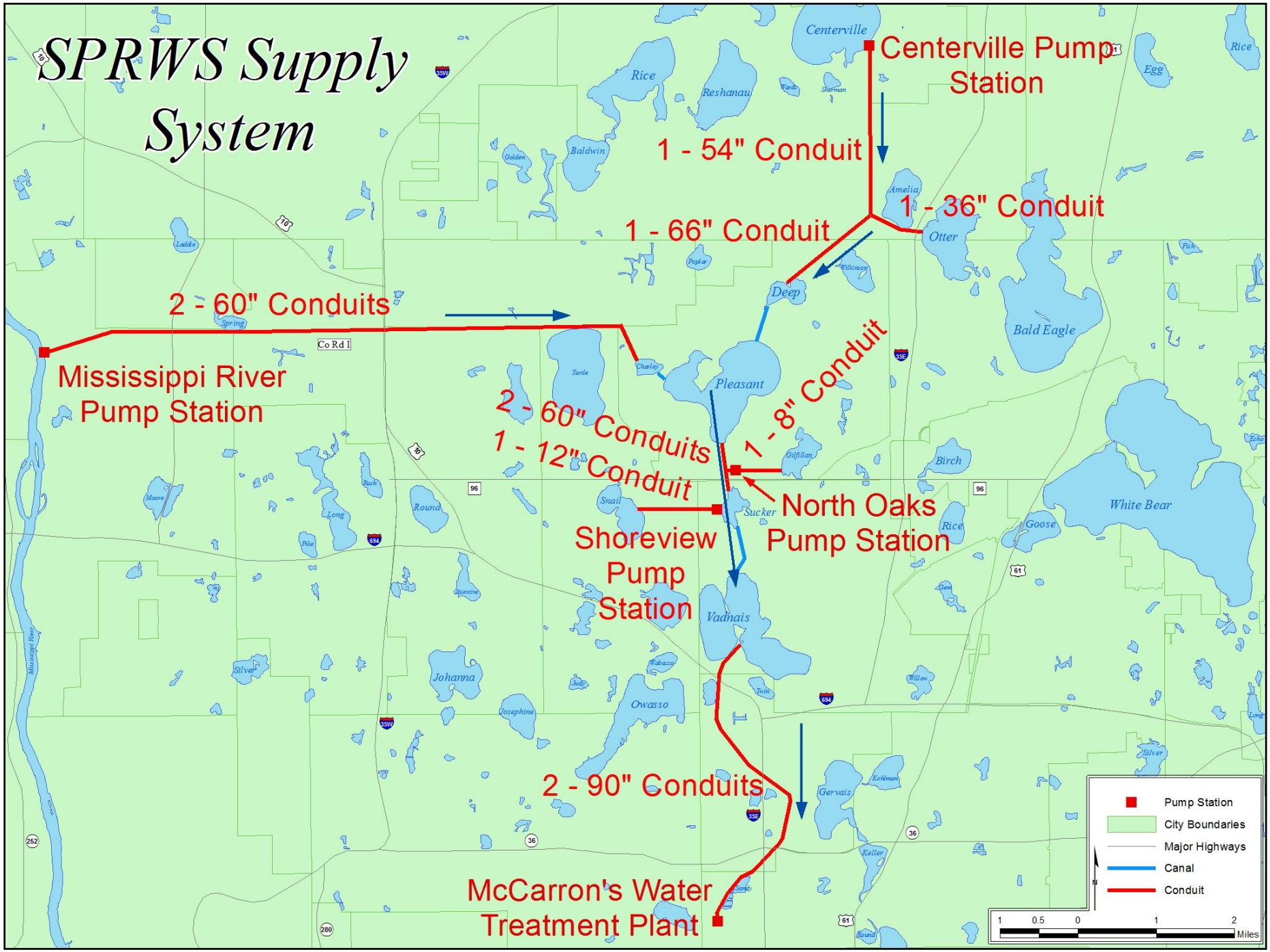
SPRWS Supply System
Centerville
Centerville Pump Station
1 - 54" Conduit
1 - 36" Conduit
1 - 66" Conduit
2 - 60" Conduits
Mississippi River Pump Station
Co Rd I
2 - 60" Conduits
1 - 12" Conduit
1 - 8" Conduit
North Oaks Pump Station
Shoreview Pump Station
2 - 90" Conduits
McCarron's Water Treatment Plant
Rice
Reshanau
Baldwin
Golden
Amelia
Otter
Deep
Wilkinson
Poplar
Ladde
Spring
Turtle
Charley
Pleasant
Bald Eagle
Gilfillan
Birch
White Bear
Goose
Snail
Sucker
Round
Moore
Rush
Long
Pike
Valentine
Vadnais
Silver
Johanna
Wabasso
Owasso
Josephine
Twin
Willow
Gervais
Kohlman
Keller
Pump Station
City Boundaries
Major Highways
Canal
Conduit
1 0.5 0 1 2
Miles

Facts and Figures

Ave. day production	40 MG
Population served	433,000
Accounts	95,460
Miles of water main	1,200
Hydrants	10,243
Tanks and reservoirs	20
Pumping stations	11

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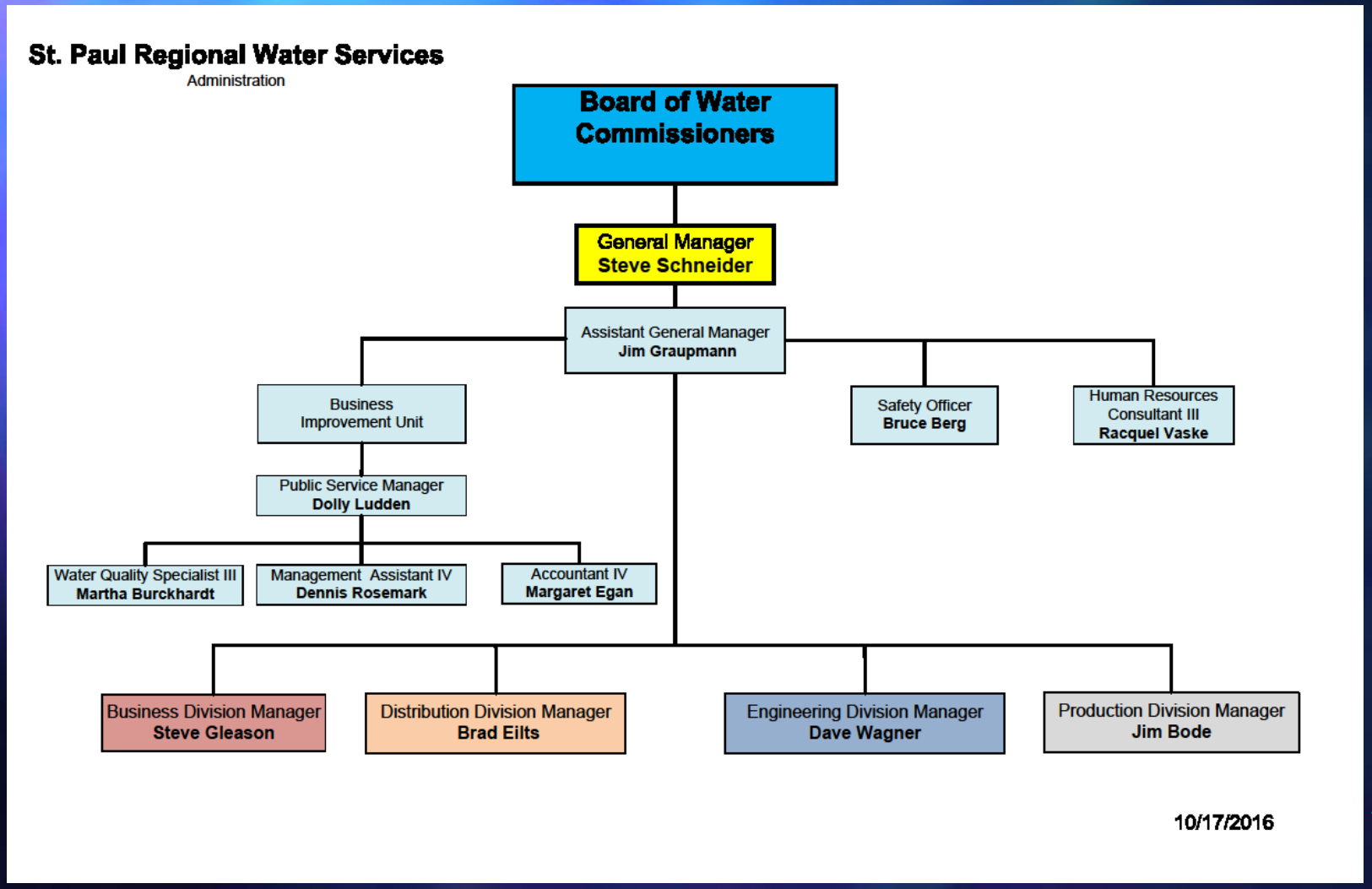
Organization Chart



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Asset Management

- SPRWS water production and distribution assets are aging and much effort is spent on maintenance.
- Future improvements are needed to replace aging infrastructure and improve reliability & efficiency.
- Risk-based approach to asset management has been used.

Risk = (consequence x likelihood)

How severe are the consequences of asset failure?

How likely is it for the asset to fail?

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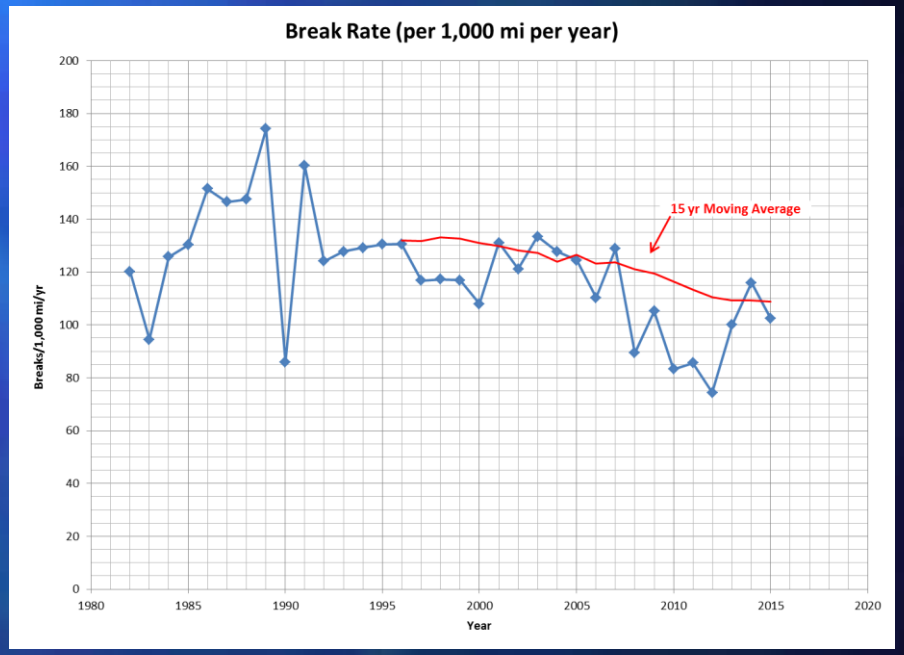
Current State of Buried Infrastructure

- 1,200 miles of water main
- 27% over 100 years old
- 43% over 80 years old
- 48% 6-inch diameter
- 70% cast iron (1960s or older)
- 100-150 main breaks per year
- 98% of main breaks are on cast iron mains



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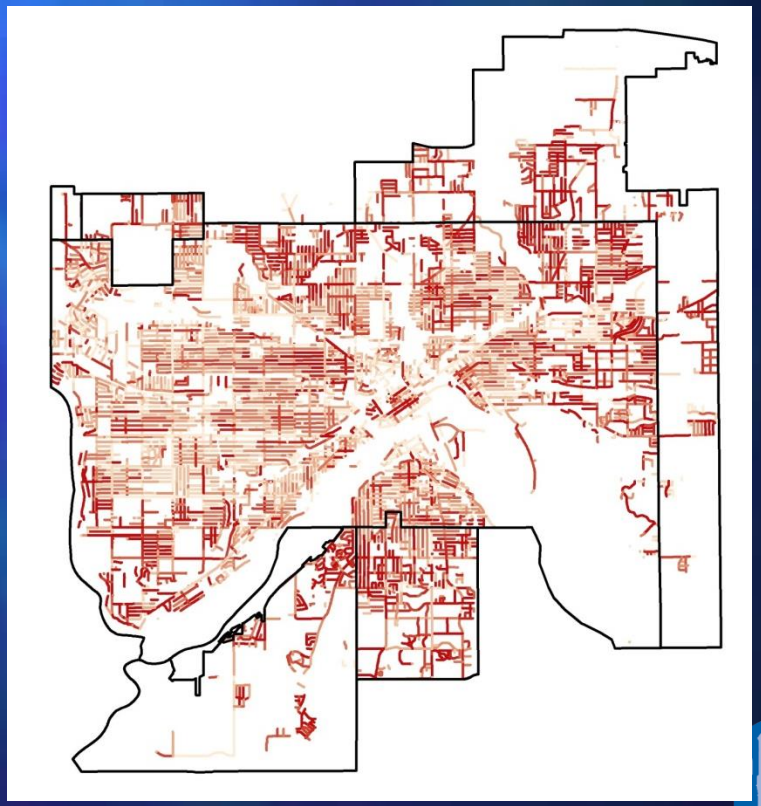
Factors Influencing Likelihood of Failure in Cast Iron Mains

- Year of install (not necessarily age)
- Diameter
- Length
- Prior breaks
- Storm sewer crossings
- Pressure/elevation
- Land use
- Pressure zone
- Proximity to tank
- Soil type



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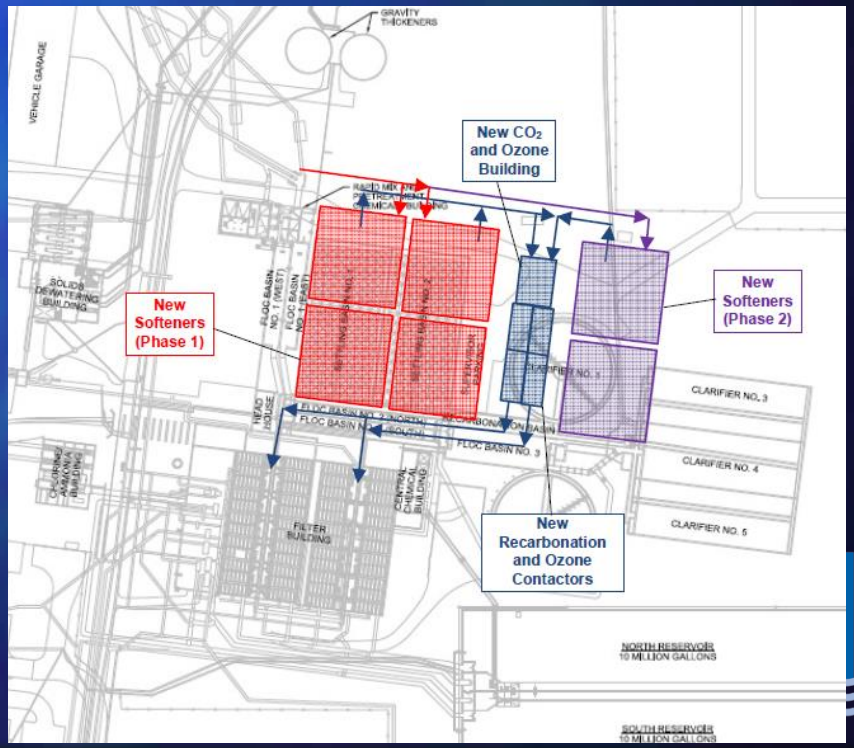
Master Plan for Production Assets

- Provides a road map of improvements needed over the next 40 years to maintain a reliable, viable utility.
- Anticipates future water demands and regulations that need to be met.
- Prioritizes the projects that are identified.
- Provides an implementation plan, with a schedule and cost elements.



Budget Considerations

- Board of Water Commissioners role.
- Decision made to invest now vs. later.
  - Water treatment and supply.
  - Water main replacements.
- Continue to create value for rate payers.
  - Continued investment critical for success.

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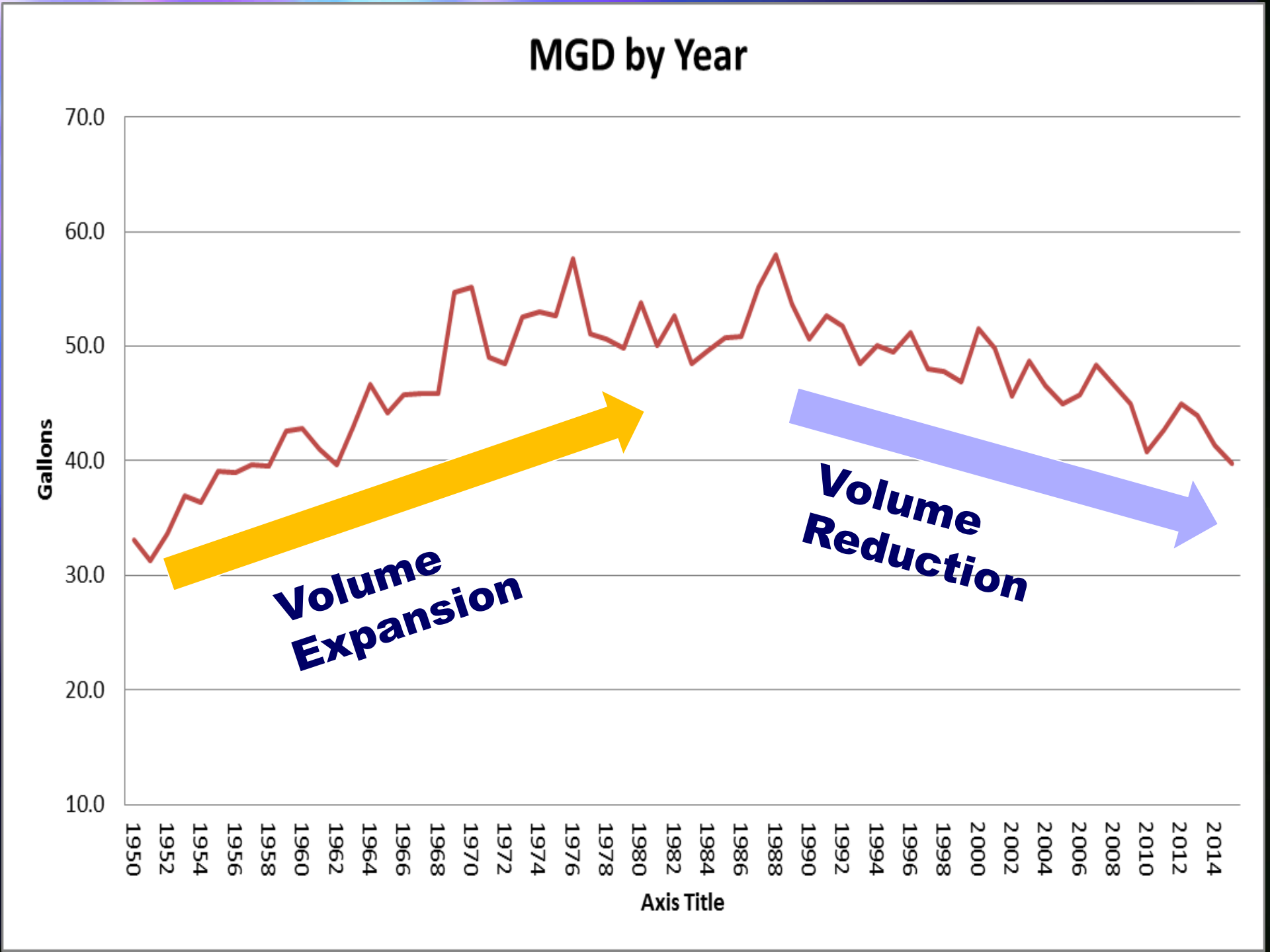
MGD by Year
70.0
60.0
50.0
40.0
30.0
20.0
10.0
Gallons
Volume Expansion
Volume Reduction
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Axis Title

Additional Challenges

Past Considerations

- Quantity drove system design.
- System was designed and built in an era of expanding population and water consumption.
- Water age in the system was not a design consideration.
- Few drinking water regulations looked at water in the distribution system.

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Additional Challenges

Future Challenges

- Quality & quantity drive system design.
- Due to lower per capita consumption, we need to reduce storage volumes and production rates.
- We know increased water age has a negative impact on water quality.
- More drinking water regulations are being applied to water quality in the distribution system (disinfection by-products, total coliform rule, lead and copper rule).

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Additional Challenges:

Cost and Coordination of Water Main Replacement

- Water main construction is coordinated with street reconstruction.
- Cost of utility work is highly dependent on restoration (street repair/construction).
- More arterial street restoration vs. residential street reconstruction.
- Changes in system demands.

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Additional Challenges:

Distribution Water Quality and Maintenance

- 43% of the system is more than 80 years old.
- Over half of the system is unlined cast iron pipe.
- Distribution maintenance:
  - Uni-directional flushing
  - Hydrant inspection
  - Valve operation
  - Break repair
  - Etc.

Moving Forward

- Board of Water Commissioners are committed to continued investment.
- Over $325 million of investments are included in the 10-year capital plan.
- Funding is split between pay-as-you-go and debt.
  - SRF funding will continue to be sought.
- Private service line replacement assistance may be necessary to address lead abatement.

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Moving Forward

- Quality water production is a "forever" business.
- Success requires continued investment.
- Investment requirements need to be balanced with reasonable rates for service.

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