



Transmission Main Condition Assessment

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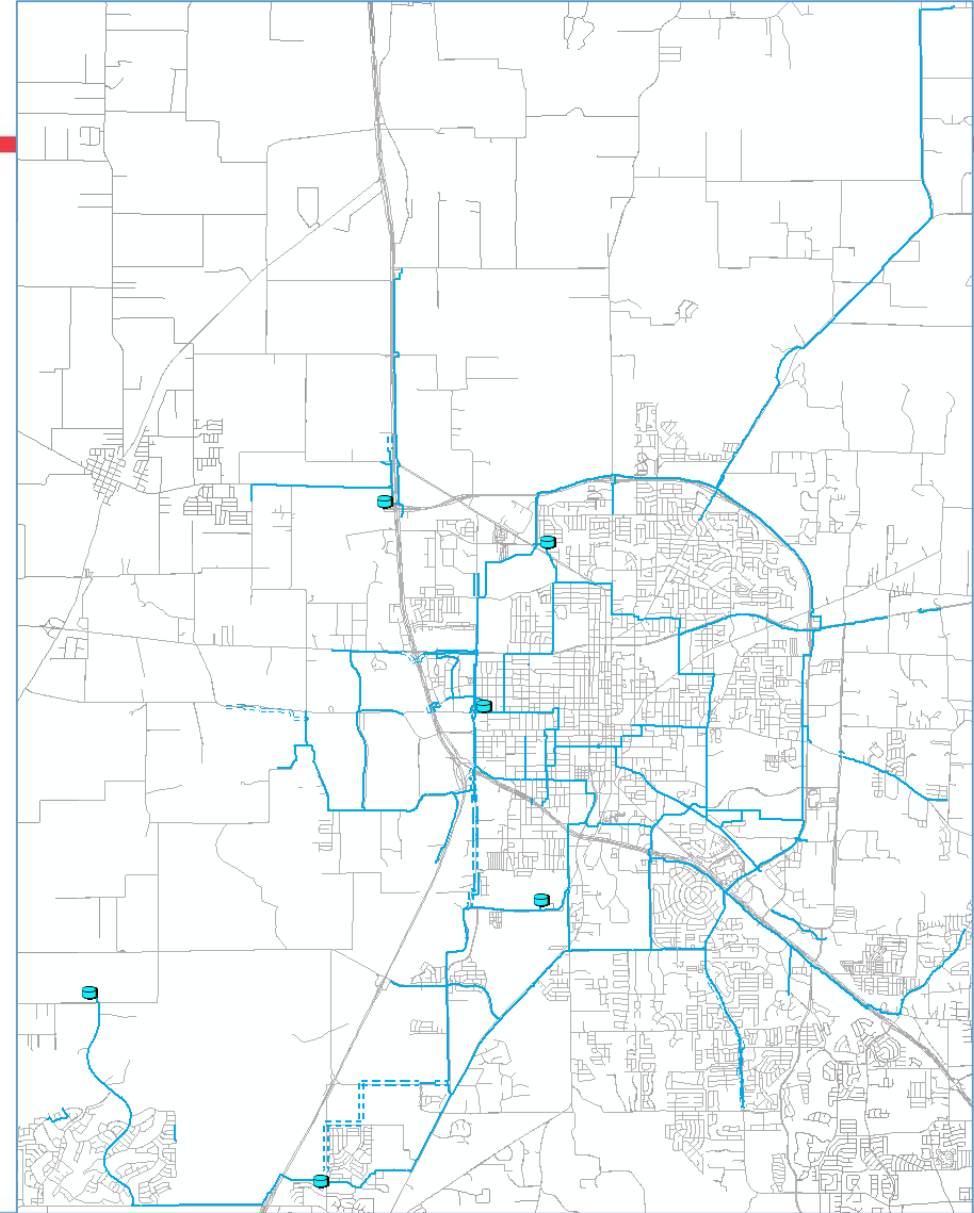
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Transmission Mains

- Water mains 14" or larger
- Transmit water around the City before branching off to reach customers
- Carry higher flows than smaller Distribution mains
- Are critical to ensure our water reaches customers
- Some of the longest design life of all water assets



Condition Assessment Methodology

- Remotely controlled and/or monitored free-swimming inspection equipment will be sent through each pipeline
- A variety of technologies will be applied, which can:
 - Listen for leaks or irregular flow of water caused by pipe degradation
 - Determine remaining thickness of the steel cylinder within the pipe wall
 - Visually identify damage or degradation to the interior pipe wall
- Inspections typically will not involve excavation
- In limited cases, installation of a pipe access point may be required
- Expert review of results will report on areas of concern
 - Identified leaks or potential leaks will be repaired as they are found
 - Overall pipe condition will guide future capital decisions

Improving Service Through Main Break Prevention

- Any main break is difficult to tolerate
 - Potential water outages
 - Potential water contamination
 - Potential pressure loss could result in loss of fire protection or a boil water notice
 - Traffic interruptions during repair
 - Temporary damage to streets or yards
- Impacts are magnified on larger mains
- We want to avoid transmission main breaks where possible

Cost Savings vs. Capital Reinvestment

Item	Installation	Assessment
Per Foot Cost to Install or Inspect	\$500-\$1,500	\$5-\$25
Life Cycle of Investment (years)	70	10
Annualized Cost	\$7-21	\$0.50-\$2.50

At a cost of 35% or less compared to capital reinvestment, assessments are a great tool to extend the in-service life of transmission mains and anticipate failures before they appear