Watermain Dead End Improvement Program

Presentation to General Committee

October 2011

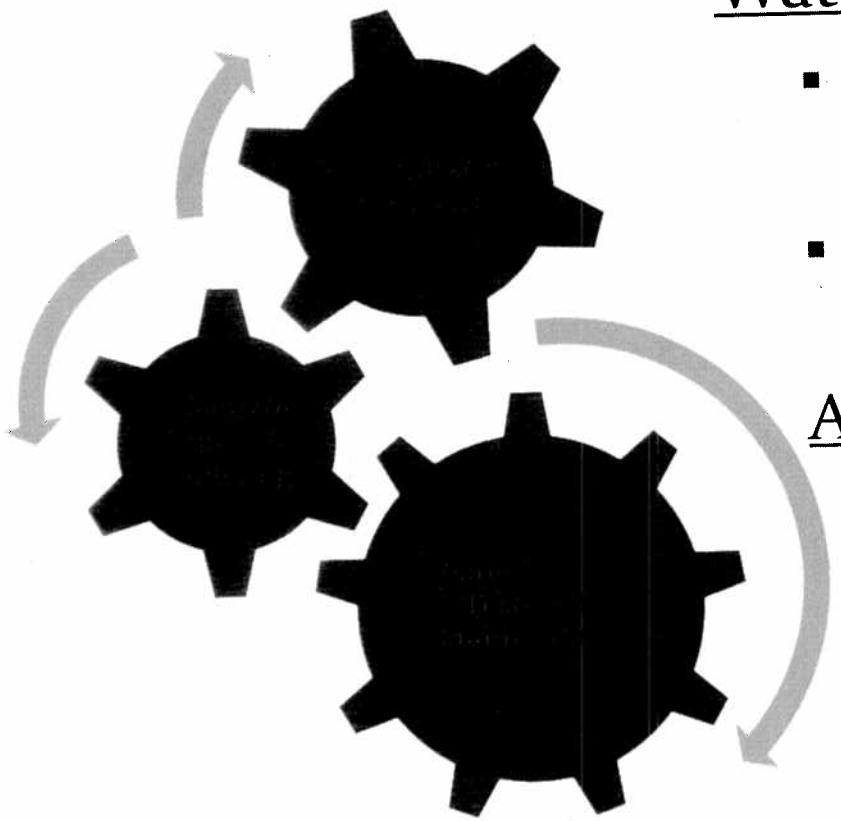
Purpose

- At the General Committee September 19th, Committee asked Waterworks for a presentation on the Dead End Flushing Program

Agenda

1. Key Services – Water Supply
2. Chlorine in Drinking Water
3. Dead Ends are Water Quality Concerns
4. Dead End Improvement Program
5. Next Steps

Key Services - Water Supply



Water Quality

- Strictly regulated by the Province of Ontario - DWQMS
- Regular testing, modeling, maintenance and repair

Adequate Supply and Pressure

- System Modeling for consumption and Fire Flow
- Construction and Repairs – upgrades and rehabilitation

Chlorine in Drinking Water

- Chlorine purifies water for human consumption.
- Effective in controlling of waterborne disease.
- All drinking water must have a minimum level of chlorine residual as part of the Drinking Water Standards.

- **Chlorine residual concentration will decay over time and can become a water quality hazard** if the water that stays in the watermain too long.

Dead Ends are WQ Concerns

- Water aging is a function of supply and demand
- As water is used it is replaced by fresher water that can maintain chlorine levels.
- In areas where there is low demand the water can stagnate and become a water quality concern.
- Dead ended watermains can be areas of stagnant water, and will require flushing to keep chlorine levels within the standards

Dead End Improvement Program

- 258 Dead End Watermains in Town
  - Cul-de-sacs
  - Temporary dead ends awaiting continued development
  - Pressure boundaries

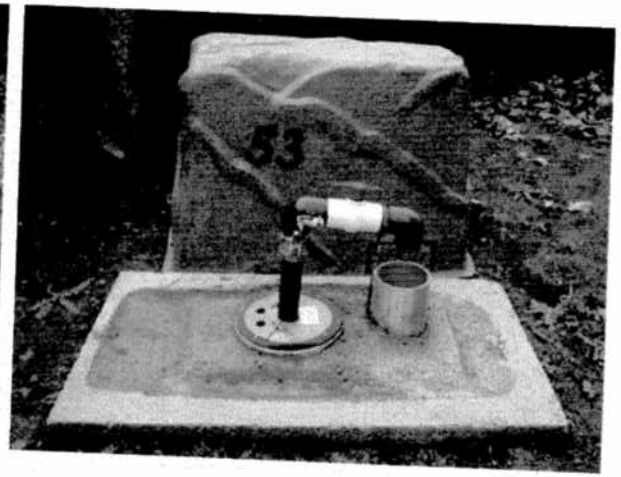
- 3 Strategies to deal with maintaining chlorine residuals
  - Manual Flushing
  - Automated flushing stations
  - Looping watermain or eliminate dead end

Manual Flushing

- Labour intensive – one hour or more per end dead
- Some may need to be flushed several times per week
- Operator can check Residual Chlorine on-site
- De-chlorinate flushed water
- Icy conditions in winter

Auto Flushing Stations

- Automates the manual flushing program – less labour
- Ideal for areas requiring frequent flushing
- Uses more water vs manual flushing
- Internal drainage avoids icing in winter
- Cost to install



Water Main Looping

- Eliminates the need for flushing
- Improves water system circulation and pressure
- Expensive construction costs
- Looping is not always practical

Breakdown of Dead Ends

Total Dead Ends in System	258	
• Looped Watermain	11	Complete
• Disconnected	6	Complete
• Auto Flusher Installed	13	Complete
• Pressure Boundary	38	TBD
• Manual Flushing	190	On-going

Next Steps

1. Continue to monitor effectiveness of Auto Flushers
    a. Monitoring flushing frequency and duration to minimize wasted water
    b. Monitoring maintenance and costs
2. Resolve solutions for Pressure Boundaries
3. Work with Engineering to ensure dead ends are minimized in new developments