Numerical methods for modeling transient flow in distribution systems

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Comparing The MOC and WCM

- Developed Comparison program
- Similar Calculation Routines
- Compare Number of Times Pressures and Flows are Updated at a Location
- Compare Solutions (pressure/flow history)
- Solutions Virtually Identical (as expected)
- Identical Results Using Commercial Software
Example from Streeter Text

$\Delta t = 0.1$ sec.
Example from Streeter Text
Comparison Using Commercial Software

Wave Characteristic & Method of Characteristics Comparison
Junction 4 (Valve Closure - 0.6 seconds)
Demo Example

1033333 97619
EPANet Example 2

6 second
Pump shutdown

HEAD at Position 24

2730215  280575
Comparison Using Commercial Software

Wave Characteristic & Method of Characteristics Comparison
Node 19 - 8 Second Rundown

Graph showing comparison of MOC and WCM methods over time with pressure head in feet.