Using a Hydraulic Model for Operations Support

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May 10, 2018
SUEZ Water Pennsylvania

- 40 municipalities
- 62,000+ connections
- 96 employees
Harrisburg Water System
12-Month Rolling Average

Water Supplied
Total Water Sold

SUEZ Harrisburg Operation NRW
## SUEZ Harrisburg Operation Distribution Zones
### 2018 First Quarter Results

<table>
<thead>
<tr>
<th>Distribution Zone</th>
<th>Production (Minus Plant Use)</th>
<th>Sales (MGD)</th>
<th>NRW Volume (MGD)</th>
<th>NRW/Mile (GPD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBG System Total</td>
<td>7.9</td>
<td>5.0</td>
<td>2.9</td>
<td>5,512</td>
</tr>
<tr>
<td>D-2</td>
<td>3.6</td>
<td>2.5</td>
<td>1.1</td>
<td>10,392</td>
</tr>
<tr>
<td>All Remaining Zones</td>
<td>3.7</td>
<td>2.3</td>
<td>1.4</td>
<td>5,650</td>
</tr>
</tbody>
</table>
Hydraulic Model of SUEZ Harrisburg System

Watergems logo

Model screenshot
Meter Locations in GIS

Metered = 2,190 gpm
NRW = 927 gpm
(evenly distributed)
Model Macro Calibration

- Calibrated to only a few key areas
- Performed additional pressure logger study for major transmission
- Needed flow logger study, also
D-2 Micro Calibration

C-factor updated from 80 to 130 on 16-inch

Discovered closed valve on 12-inch
Pressure Management Study – Static Pressure

Most helpful for leaks in high pressure area.
- At least 3 large PRVs (or reduced redundancy)
- Interrupted transmission

Needed district metered areas (DMAs)
SUEZ Harrisburg D-2 Zone
SUEZ DMA

DMA Meter Vault Cover
Power & Communications

Meter Remote

VNr (Cellular Modem) with integral antenna
SUEZ DMA

Electromagnetic Meter Technology
SUEZ DMA

Ultrasonic Meter Technology
SUEZ DMA

Battery Powered Electromagnetic Meter Technology
SUEZ Harrisburg Operation Main Break Detection

Main Break Early Detection
Effects of adding DMA meters:

- Can quantify (GPM) previous “valve noise”
- Enabled overnight DMA monitoring
- Ruled out some areas as NRW source
- Faster leak detection and response
- Guides future NRW efforts
  - Additional meter installations (8+ locations)
Thank you for your time and attention!